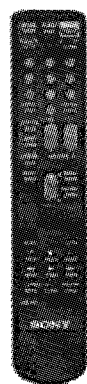


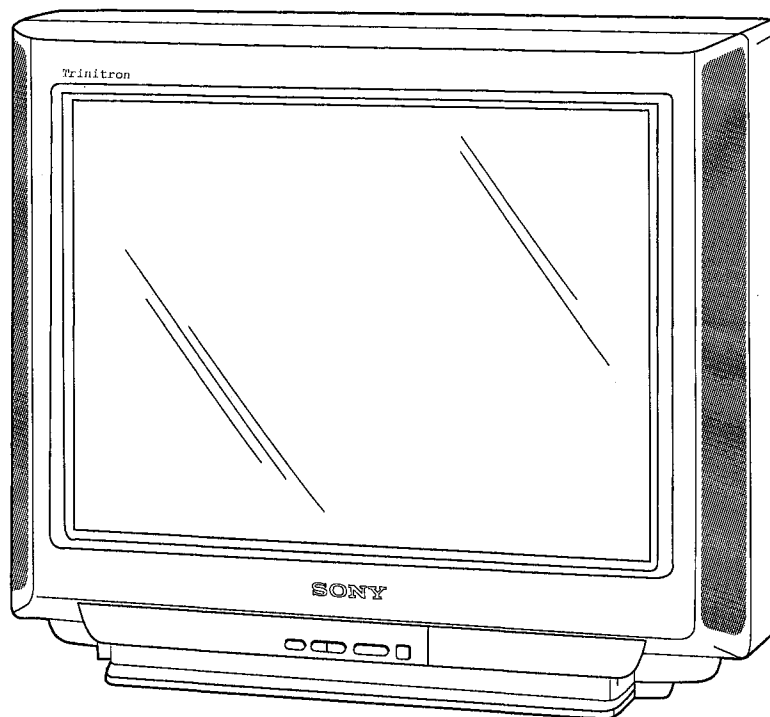
SERVICE MANUAL

BA - 3 CHASSIS

<u>MODEL</u>	<u>COMMANDER</u>	<u>DEST.</u>	<u>CHASSIS NO.</u>	<u>MODEL</u>	<u>COMMANDER</u>	<u>DEST.</u>	<u>CHASSIS NO.</u>
KV-20V60	RM-Y117	US	SCC-J84H-A	KV-20V60	RM-Y117	CND	SCC-J93E-A



RM-Y117



KV-20V60



※ Please file according to model size.

TRINITRON® COLOR TV
SONY®

SPECIFICATIONS

■ KV-20V60

Television system	American TV standard, NTSC COLOR	Input	VIDEO (Phono Jack) 1Vp-p, 75Ω unbalanced negative sync S-VIDEO IN (S terminal) Y: 1Vp-p, 75Ω unbalanced negative sync C: 0.286 Vp-p (Burst signal) 75Ω
Channel coverage	VHF : 2 - 13 UHF : 14 - 69 CATV: 1 - 125		Audio (Stereo) (Phono jacks): 500 mVrms (100% modulation) Impedance: 47 KΩ A/V input Front and Rear
Picture tube	Trinitron® tube 20-inch picture measured diagonally		
Antenna	75Ω external antenna terminal for VHF/UHF, F-Terminal	Output	Headphone jack Audio output (Var./Fix.) More than 800 mVrms at the maximum volume setting(Variable) More than 800 mVrms (Fix) Impedance: 5KΩ
Speaker Output	2 speakers (2W x 2) 8Ω		
Speaker size	Full range 80 mm (3 1/8 inches) x 2		
Power requirements	120V AC, 60Hz		
Power consumption	90W when in use 7W in stand by		
Dimensions (W/H/D)	550 x 464 x 468.8 mm (21 5/8 x 18 1/4 x 18 1/2 inches)		
Weight	23.4 Kg (51 lbs 8 oz)		
Supplied accessories	Remote Commander RM-Y117 with 1 AA size (R6) battery		

Design and specifications are subject to change without notice.
SONY CORPORATION Printed in U.S.A.

SAFETY CHECK-OUT (US model only)

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any). Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microamperes) .

Leakage current can be measured by any one of three methods:

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

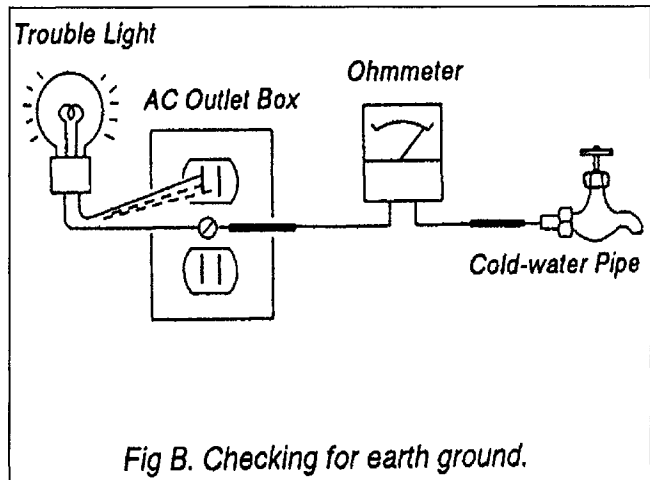
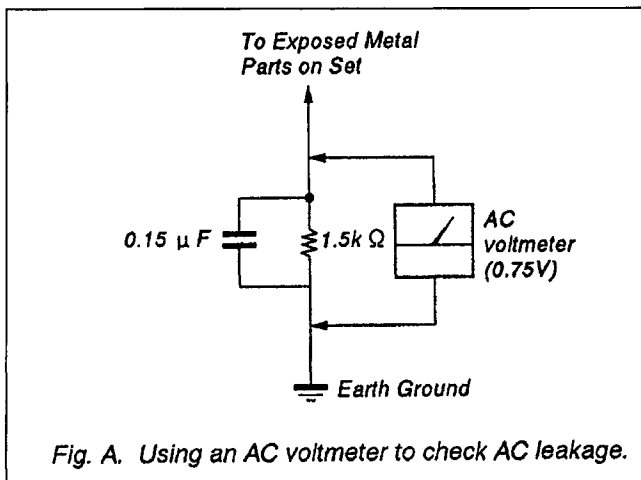


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CAUTION!!

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

WARNING!!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS. THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK Δ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS, AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SECTION 1 GENERAL

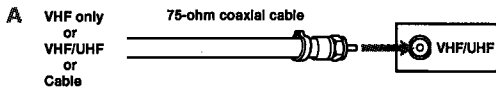
The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instructions remain as in the manual.

Step 1: Connecting the TV

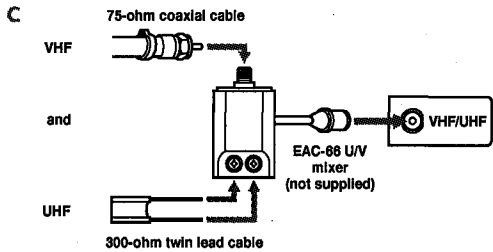
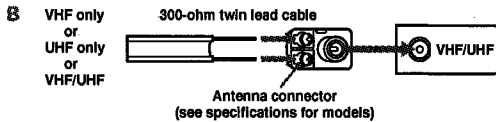
You can use an indoor antenna, outdoor antenna, or cable system with your TV. Outdoor antennas or cable TV systems usually provide the best picture quality.

Connecting an Indoor, Outdoor or Cable Antenna

Connect your antenna or cable to the TV's VHF/UHF antenna terminal.

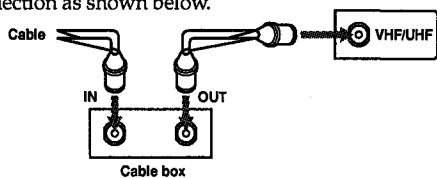


If you cannot connect your antenna or cable directly to the TV antenna terminal, follow one of the diagrams below.



Connecting to a Cable TV System Through a Cable Box

If your cable system requires use of a cable box, make the connection as shown below.



Connecting a VCR

See your VCR instructions to set up the VCR. After connecting the VCR to the TV, you will be able to do the following:

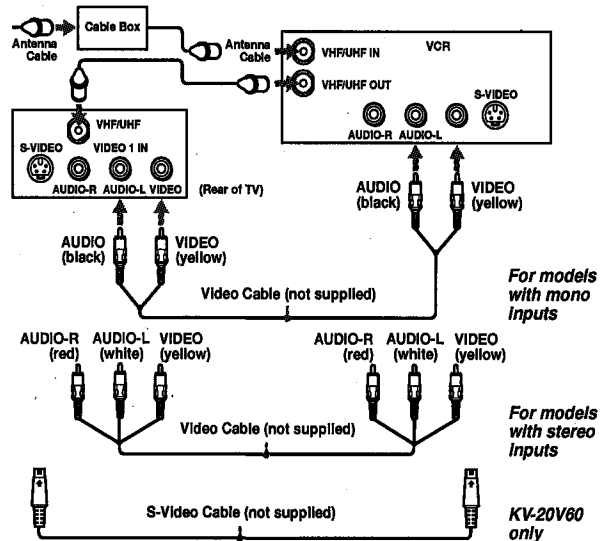
- Watch video tapes
- Record one TV program while viewing another

Check the model number of your TV and select the appropriate connection diagram.

Notes

- If your cable system requires use of a Cable Box, install it between the VCR and the TV.
- For a monaural VCR, connect the audio output of the VCR to AUDIO L (MONO) on the TV.
- Connect your S-Video cable (KV-20V60 only) to the S-Video input on the TV. S-Video will override your standard video input, providing the most stable picture.

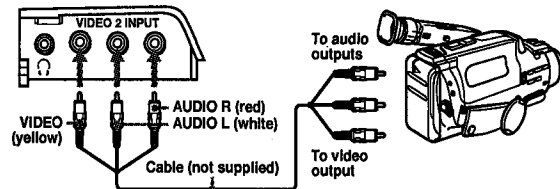
Warnings and Cautions • Connecting the TV • Connecting an Antenna • Connecting a Cable Box • Connecting a VCR



Connecting a Camcorder

KV-13M30, 13M31, 20S30, 21RS30C only

Use this connection to view a video tape from a camcorder.



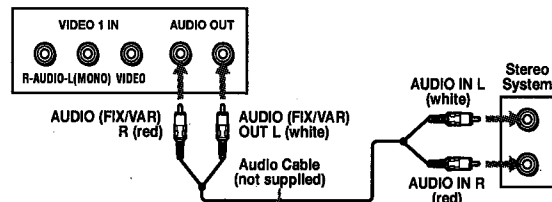
Notes

- For a monaural camcorder, connect the audio output of the camcorder to AUDIO L (MONO) on the TV.
- If you are connecting your camcorder to a monaural TV (KV-13M30, 13M31 only), plug the audio connector into the AUDIO input on the TV.
- You can also connect a camcorder to inputs on the rear of the TV.

Connecting an Audio System

KV-20S30, 21RS30C only

To listen to TV audio through a separate stereo system, connect the TV as shown below. See page 11 to switch to the external speakers.



Step 2: Using the Remote Control

Instructions in this manual are based on using the remote control. You can also use the controls on the TV.

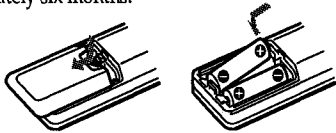
The menu illustrations are from KV-20M20. When features found on other models are discussed, the manual lists the models covered by that specific set of menus.

Note

- The menu disappears 90 seconds after you press a button, or immediately after you press MENU.

Inserting Batteries

Insert two size AA (R6) batteries (supplied) by matching the + and - on the batteries to the + and - inside the battery compartment. With normal use, the batteries should last for approximately six months.



Notes

- Remove the batteries to avoid possible damage from battery leakage if you will not be using the remote control for an extended period of time.
- Handle the remote control with care. Avoid dropping it, getting it wet, or placing it in direct sunlight, near a heater, or where the humidity is high.

Changing the Menu Language

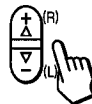
Except Canadian models

If you want to view the menus in Spanish, you can change the menu language.

- Press MENU. The Main menu appears.



- Press Δ+ or ∇- to move the cursor (▶) to ENGLISH and press RETURN.



ENGLISH will turn red.

- Press Δ+ or ∇- to select ESPAÑOL and press RETURN.



ESPAÑOL will turn green.

- Press MENU to return to the TV program.

Note

- Some parts of the Spanish menus will appear in English.

Step 3: Setting up Your Channels

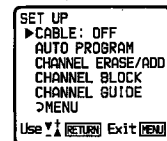
Setting Cable TV On or Off

If you have connected the TV to a cable TV system, set CABLE to ON. If not, set CABLE to OFF.

- Press MENU.
- Move the cursor to SET UP and press RETURN.
- Move the cursor to CABLE and press RETURN.



- Press Δ+ or ∇- to select ON or OFF.
- Press RETURN.
- Press MENU to return to the TV program.



Note

- If the screen is black, the TV is set to a video input and you cannot select CABLE. Press TV/VIDEO until a channel number appears, then follow steps 1-6.

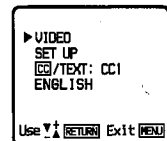
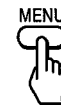
Auto Programming Your Channels

TV channels can be preset easily. First, you can store all the receivable channels automatically. Later, you can erase unwanted channels or add additional channels.

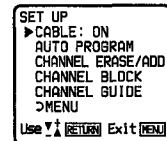
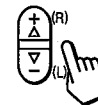
Notes

- If the TV is set to VIDEO, you cannot run AUTO PROGRAM. Press TV/VIDEO on the remote control until a channel number appears.
- It is usually best to preset channels during the day when the greater number of channels are broadcasting.

- Press MENU. The Main menu appears.



- Press Δ+ or ∇- on the remote control to move the cursor (▶) to SET UP. Press RETURN.



The SET UP menu appears.

- Press Δ+ or ∇- to move the cursor to AUTO PROGRAM and press RETURN.

AUTO PROGRAM appears on the screen and the TV starts scanning and presetting channels.

When all of the receivable channels are stored, AUTO PROGRAM disappears.

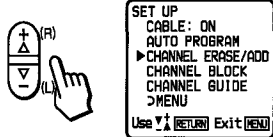
Note

- AUTO PROGRAM will tune in all of the channels in your area, including some with weak or scrambled signals. They will appear fuzzy on the screen. You can erase them using CHANNEL ERASE/ADD.

Erasing or Adding Channels

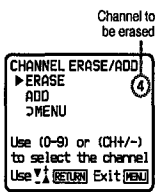
After you run AUTO PROGRAM, you can erase unnecessary channels or add new ones.

- 1 Press MENU.
- 2 Press Δ + or ∇ - to select SET UP and press RETURN.
- 3 Press Δ + or ∇ - to select CHANNEL ERASE/ADD and press RETURN.



- 4 To erase or add an unwanted channel:

- (1) Press CH +/- or 0-9 to select the channel you want to erase or add.
- (2) Press Δ + or ∇ - to select ERASE or ADD.
- (3) Press RETURN.



If you are erasing a channel, the "-" symbol appears next to the channel number. If you are adding a channel, the "+" symbol appears next to the channel number.

- 5 To erase or add other channels, repeat step 4.
- 6 Press MENU to return to the TV program.

Note

- If you erase or add a VHF or UHF channel, the cable TV channel with the same number is also erased or added.

Watching the TV

Press POWER to turn the TV on.

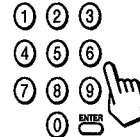
Note

- If VIDEO appears on the screen, press TV/VIDEO so that a channel number appears.

Selecting a Channel Directly

Press 0-9 to select a channel.

The channel will change after 2 seconds, or you can press ENTER for immediate selection.



Scanning Through Channels

Press CH +/- until the channel you want appears.



Jumping Quickly Between Two Channels

Press JUMP.

The TV switches from the current channel to the previous channel that you watched.



Pressing JUMP again switches back to the first channel.

Note

- You can only jump to channels you have selected with the 0-9 keys, or back to the last channel you scanned.

Adjusting the Volume

Press VOL +/- to adjust the volume.



Muting the Sound

Press MUTING.

MUTING appears on the screen.

To restore the sound, press MUTING again, or press VOL +.



Using the VIDEO Menu

Adjusting the Video Settings

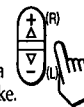
You can adjust the picture, hue, color, brightness, and sharpness of any TV image.

- 1 Press **MENU**.
- 2 Move the cursor (▶) to **VIDEO** and press **RETURN**.



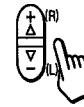
- 3 Press **Δ+** or **∇-** to select the feature that you want to adjust and press **RETURN**.

See the Adjustable Items chart for a list of the adjustments you can make.



- 4 Press **Δ+** or **∇-** to adjust the setting of the selected feature and press **RETURN**.

The new setting appears in the VIDEO menu.



- 5 To adjust other video settings, repeat steps 3 and 4.
- 6 Press **MENU** to return to the TV program.

ADJUSTABLE ITEMS

Item	Press Δ+ (R) to	Press ∇- (L) to
PICTURE	Increase the contrast	Decrease the contrast
HUE	Increase the green tones	Decrease the green tones
COLOR	Increase color intensity	Decrease color intensity
BRIGHTNESS	Brighten the picture	Darken the picture
SHARPNESS	Sharpen the picture	Soften the picture

Restoring the Factory Video Settings

- 1 To restore the factory video settings, press **RESET** while the **VIDEO** menu is displayed.

All the settings except **PICTURE** are restored to factory settings.

Displaying On-Screen Information

Use the **DISPLAY** key to check the TV's Display settings.

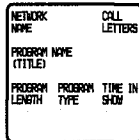
- 1 Press **DISPLAY**.



The channel number will be displayed. The TV will also display the MTS mode if **SAP**, **MAIN**, or **MONO** are selected (except **KV-13M20**, **13M30**, **20M20**). The MTS mode display disappears after 4 seconds.

- 2 Press **DISPLAY** again.

XDS ON will appear on the screen. If **XDS** (Extended Data Service) is broadcasting, information will then appear on the screen (except **KV-13M20**, **14PM1**, **14R20**, **14R20C**, **14RD1**).



- 3 Press **DISPLAY** again.

CC1 ON (if selected) will appear on the screen for a few seconds. Captions will then appear at the top or bottom of the screen.

- 4 To turn off Caption Vision or **XDS** display, press **DISPLAY** again until **DISPLAY OFF** appears.

Note

- See page 13 for more information about Caption Vision.

Watching Video Tapes

- 1 Press **TV/VIDEO** until the correct video input appears.



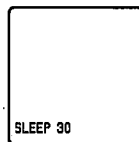
- 2 Press **PLAY** on your VCR to view the video tape.

Setting the Sleep Timer

Sleep Timer allows the TV to stay on for a length of time and then shut off automatically.

- 1 Press **SLEEP** until the time you want appears.

Each time you press **SLEEP**, the display moves between 30, 60, 90, and **OFF**.



In a few seconds, the **SLEEP** message disappears.

TV WILL BE OFF SOON appears one minute before the TV shuts off.

- 2 To cancel the Sleep Timer, press **SLEEP** again until **SLEEP OFF** appears, or turn off the TV.

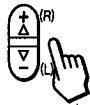
Additional Features

Selecting Stereo or Bilingual Programs (MTS)

KV-20S20, 20S21, 20S30, 20V60, 21PS1, 21RS20, 21RS20C, 21RS30C, 21SD1 only. Menus shown are for KV-20S20.

The Multichannel TV Sound (MTS) feature allows you to enjoy stereo sound (MAIN), Second Audio Programs (SAP), or monaural sound (MONO) when available.

- 1 Press MENU.
- 2 Move the cursor to AUDIO and press RETURN.
- 3 Move the cursor to MTS and press RETURN.
- 4 Press Δ + or ∇ - to select MAIN, SAP, or MONO.
- 5 Press MENU to return to the TV program.



Choose	To
MAIN	Listen to stereo sound.
SAP	Listen to bilingual and other programs.
MONO	Reduce noise during poor stereo broadcasts.

Note

- The sound of non-SAP programs will be muted when SAP is selected. If there is no SAP audio, you may hear unrelated audio in English.

Setting the Speaker Switch (SPEAKER)

KV-20S30, 20V60, 21RS30C only.

You may switch off the TV speakers when you want to listen to the TV sound through a separate stereo system.

- 1 Press MENU.
- 2 Move the cursor to AUDIO and press RETURN.
- 3 Move the cursor to SPEAKER and press RETURN.
- 4 Press Δ + or ∇ - to select ON or OFF.
- 5 Press MENU to return to the TV program.



Choose	To
ON	Listen to the sound from the TV.
OFF	Turn off the TV speaker and listen to the TV's sound through external audio system speakers.

Changing Audio Out Speaker Volume

KV-20S30, 20V60, 21RS30C only.

You can control the volume of the TV program when you play the TV sound through a separate stereo system.

- 1 Press MENU.
- 2 Move the cursor to AUDIO and press RETURN.
- 3 Move the cursor to SPEAKER and press RETURN.
- 4 Press Δ + or ∇ - to set SPEAKER to OFF. Press RETURN.

- 5 Move the cursor to FIXED or VARIABLE and press RETURN. Your selection will turn yellow.
- 6 Press MENU to return to the TV program.



Choose	To
FIXED	Adjust the volume with your stereo.
VARIABLE	Adjust the volume through the TV.

Note

- Set the volume on your stereo low when switching from VAR to FIXED to avoid overloading your speakers.

Turning on Surround Sound

KV-20V60 only

Use this feature to listen to TV audio in Surround Sound mode.

- 1 Press MENU.
- 2 Move the cursor (\blacktriangleright) to AUDIO and press RETURN.
- 3 Move the cursor to SURROUND and press RETURN.
- 4 Press Δ + or ∇ - to set Surround ON or OFF.
- 5 Press MENU to return to the TV program.



Adjusting Treble, Bass, and Balance

KV-20V60 only

- 1 Press MENU.
- 2 Move the cursor (\blacktriangleright) to AUDIO and press RETURN.
- 3 Move the cursor to TREBLE, BASS, or BALANCE and press RETURN.



Choose	To
TREBLE	Increase or decrease high pitch sounds.
BASS	Increase or decrease low pitch sounds.
BALANCE	Change the balance between speakers.

- 4 Press Δ + or ∇ - to increase or decrease the setting.
- 5 Press RETURN to make other audio adjustments.
- 6 Press MENU to return to the TV program.

Restoring the Factory Audio Settings

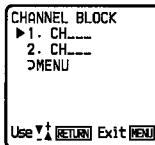
- 1 To restore the factory audio settings, press RESET while the AUDIO menu is displayed.

Blocking Out a Channel (CHANNEL BLOCK)

This feature allows you to prevent children from watching selected channels.

- 1 Press MENU.
- 2 Move the cursor to SET UP and press RETURN.
- 3 Move the cursor to CHANNEL BLOCK and press RETURN.

- 4 Move the cursor to 1 or 2 and press RETURN.



- 5 Press Δ+ or ∇- to select the channel that you want to block. Press RETURN.



- 6 Repeat steps 4 and 5 to enter the second channel that you want to block.

- 7 Press MENU to return to the TV program.

If you switch to the blocked channel, BLOCKED appears. The screen is black and the sound is muted.

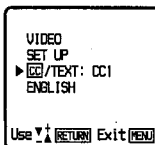
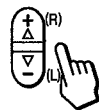
To cancel a CHANNEL BLOCK setting

- 1 Follow steps 1-4 above.
- 2 Press RESET.

Selecting a Caption Vision Option

Caption Vision options include CC1, 2, 3, and 4, or TEXT1, 2, 3, and 4. CC1, 2, 3, and 4 show a caption or printed version of the dialog or sound effects of a program. CC1 will be the setting for most programs. TEXT1, 2, 3, and 4 show text information on half of the screen. This text is not usually related to the program.

- 1 Press MENU.
- 2 Press Δ+ or ∇- to select [CC/TEXT: CC1] and press RETURN.



- 3 Press Δ+ or ∇- to select the caption type (CC1, 2, 3, 4, or TEXT1, 2, 3, or 4) and press RETURN.
- 4 Press MENU to return to the TV program.
- 5 To view Caption Vision, press DISPLAY several times until CC1, 2, 3, 4, or TEXT1, 2, 3, 4 ON is displayed if broadcasting. The caption will appear in a few seconds.
- 6 To turn off Caption Vision, press DISPLAY until DISPLAY OFF appears.

Notes

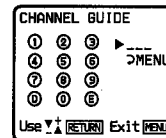
- Captions disappear for a few seconds when you press the MUTING button.
- Captions may appear with a white box or other errors if you have poor reception of the channel.

Customizing the Channel Number Buttons (CHANNEL GUIDE)

You can assign up to 12 of your favorite channels to Channel Guide locations and switch to them with the Channel Guide.

- 1 Press MENU.
- 2 Press Δ+ or ∇- to select SET UP and press RETURN.
- 3 Press Δ+ or ∇- to select CHANNEL GUIDE and press RETURN.

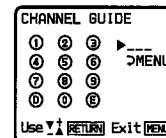
- 4 Press RETURN again to move the cursor to the number pad.



- 5 Press Δ+ or ∇- to select a number on the Channel Guide (the button number will turn red) and press RETURN.

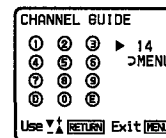
The ___ turns red.

Buttons 0-9, DISPLAY (D) and ENTER (E) are available for Channel Guide access.



- 6 Press Δ+ or ∇- to select the channel that you want to assign to that button, and press RETURN.

The TV will switch to that channel.



- 7 Repeat steps 5-7 to set other channels.
- 8 Press MENU to return to the current TV program.

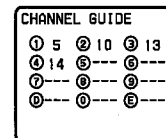
To remove a CHANNEL GUIDE setting

- 1 Repeat steps 1-6 to select the channel that you want to remove.
- 2 Press RESET.

Using the Channel Guide

- 1 Press CH GUIDE.

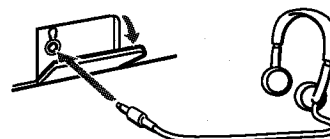
The Channel Guide shows button numbers and the channels assigned to them.



- 2 Press 0-9, DISPLAY or ENTER on the remote control to switch to the channel you want to view.
- 3 To cancel the CHANNEL GUIDE display without selecting a channel, press CH GUIDE again.

Listening with Headphones or an Earphone

Plug the headphones or earphone into the jack on the front of the TV. Using headphones will turn off the sound to the TV speakers. KV-13M20 is shown below.

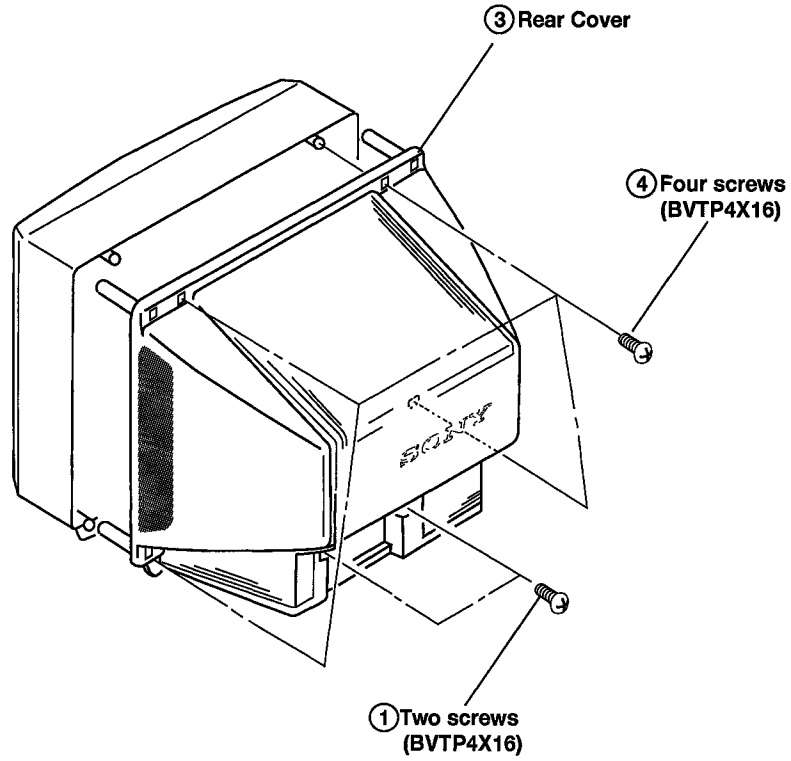


Notes

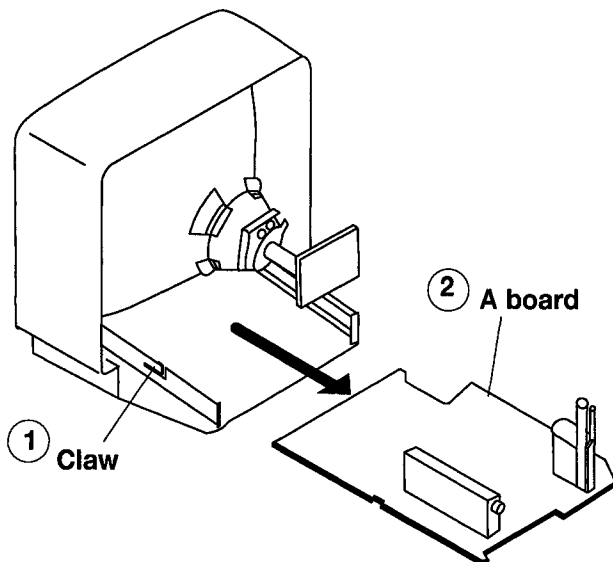
- To prevent hearing damage due to sudden or prolonged excessive volume, do not set the volume too high while listening.
- If your TV is monaural, the monaural sound will be heard from both headphones.

SECTION 2 DISASSEMBLY

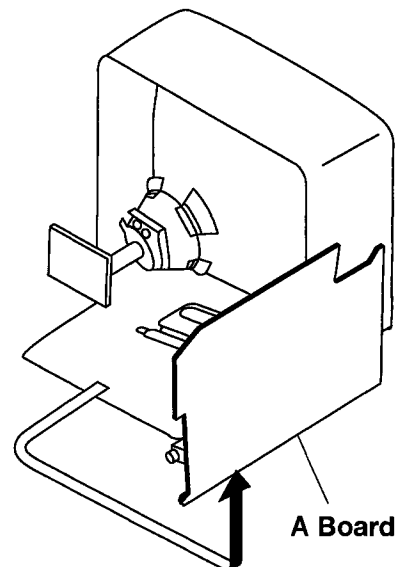
2-1. REAR COVER REMOVAL



2-2. A BOARD REMOVAL



2-3. SERVICE POSITION

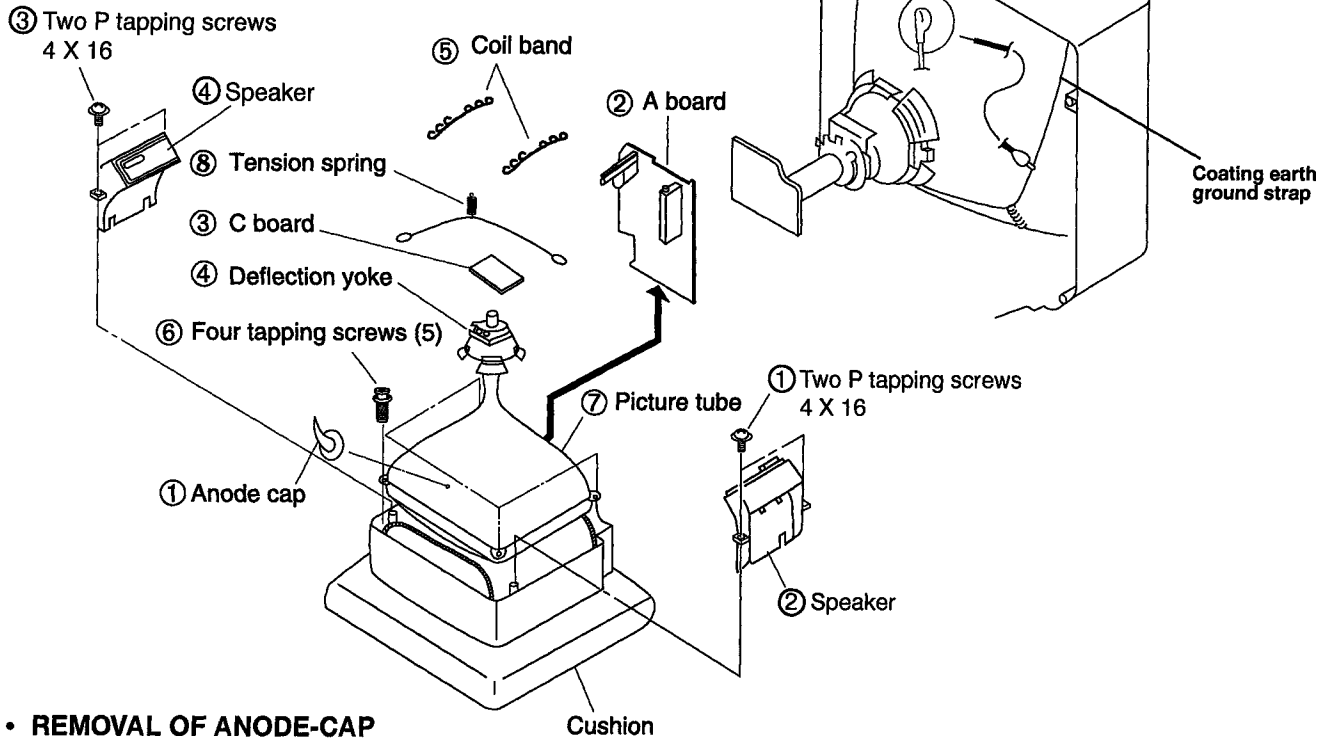


2-4. PICTURE TUBE REMOVAL

WARNING Before removing anode cap:

H.V. remains in the CRT even after the power is disconnected.

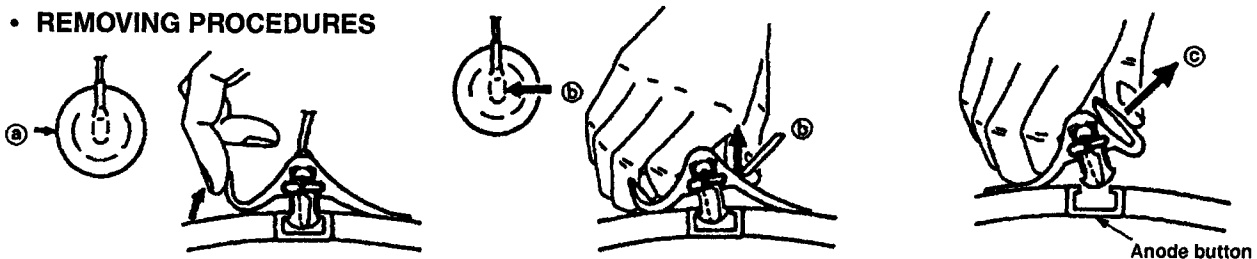
To avoid electrical shock before attempting to remove the anode cap, discharge CRT: Short between anode and CRT coating earth ground strap.



• REMOVAL OF ANODE-CAP

NOTE: Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon painted on the CRT after removing the anode.

• REMOVING PROCEDURES



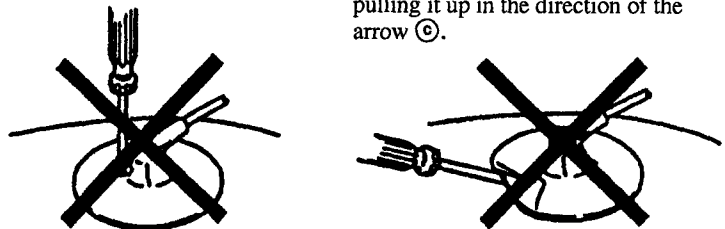
① Turn up one side of the rubber cap in the direction indicated by the arrow ㉑.

② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ㉒.

③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow ㉓.

• HOW TO HANDLE AN ANODE-CAP

- ① Don't damage the surface of anode-caps with sharp shaped material!
- ② Don't press the rubber so as not to damage the inside of anode-caps. A material fitting called a shatter-hook terminal is built into the rubber cap.
- ③ Don't turn over the foot of rubber cap. The shatter-hook terminal will stick out or damage the rubber cap.



SECTION 3 SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with rated power supply voltage unless otherwise noted.

The controls and switch should be set as follows unless otherwise noted:

PICTURE control normal

BRIGHTNESS control normal

Preparation:

- Feed in the white pattern signal.
- Before starting, degauss the entire screen.

3-1. BEAMLANDING

1. Input a raster signal with the pattern generator.
2. Loosen the deflection yoke mounting screw, and set the purity control to the center as shown in Fig.2.
3. Turn the raster signal of the pattern generator to green.
4. Move the deflection yoke backward, and adjust with the purity control so that green is in the center and red and blue are at the sides evenly. (Fig.3)
5. Move the deflection yoke forward, and adjust so that the entire screen becomes green. (Fig.1)
6. Switch over the raster signal to red and blue and confirm the condition.
7. When the position of the deflection yoke is determined, tighten it with the deflection yoke mounting screw.
8. When landing at the corner is not right, adjust by using the disk magnets. (Fig.4)

Perform the adjustments in order as follows:

1. Beam Landing
2. Convergence
3. Focus
4. Screen (G2) and White Balance

Note: Test Equipment Required

1. Color Bar Pattern Generator
2. Degausser
3. DC Power Supply
4. Digital Multimeter

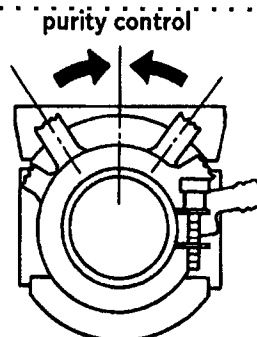


Fig. 2

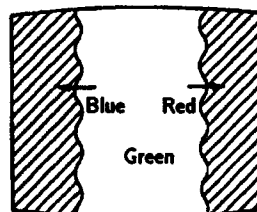


Fig. 3

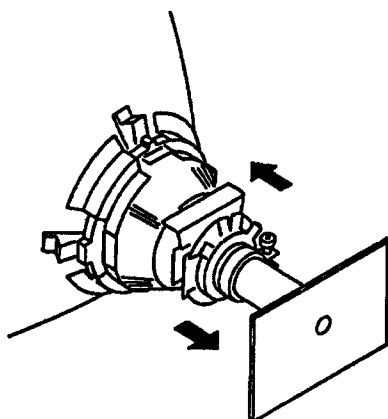


Fig. 1

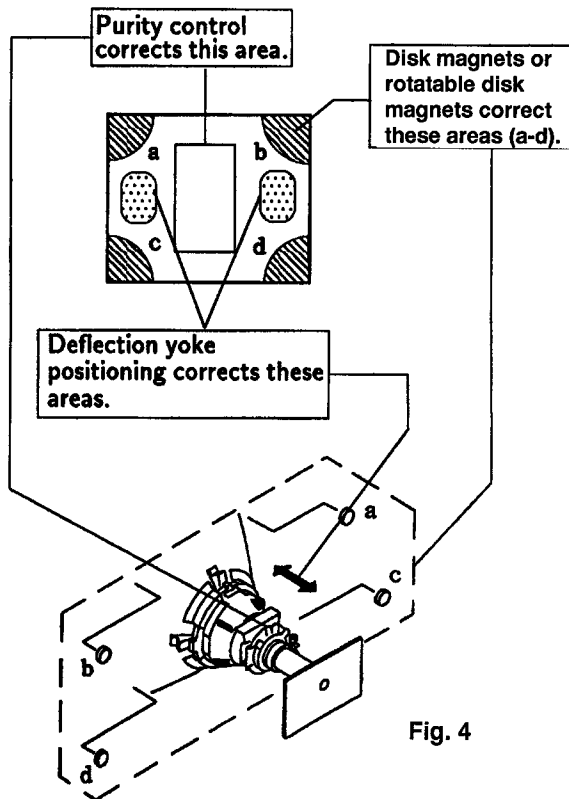


Fig. 4

3-2. CONVERGENCE

Preparation:

- Before starting, perform FOCUS, V. LIN and V. SIZE adjustments.
- Set BRIGHTNESS control to minimum.
- Feed in dot pattern.

(1) Vertical Static Convergence

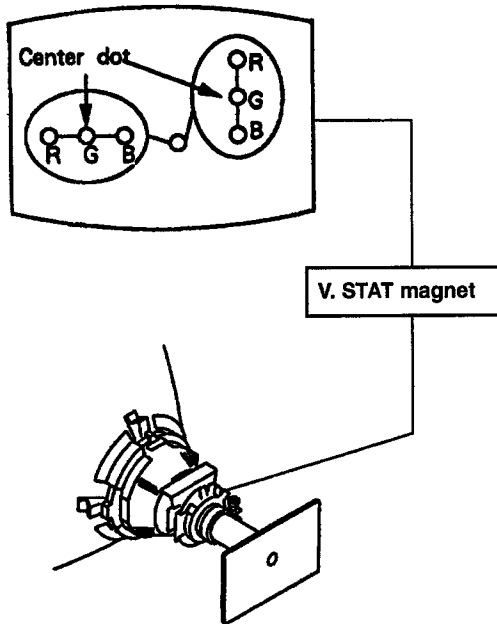
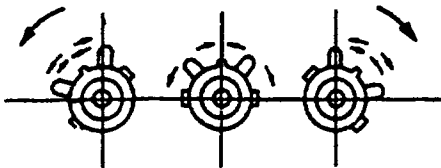
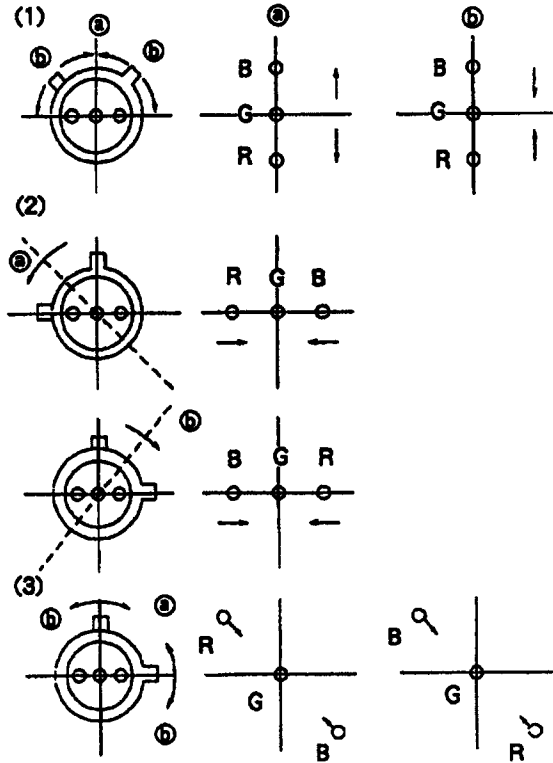


Fig. 5

1. Adjust V. STAT magnet to converge red, green and blue dots in the center of the screen. (Vertical movement)
- Tilt the V. STAT magnet and adjust static convergence to open or close the V. STAT magnet.



2. When the V. STAT magnet is moved in the direction of arrow (a) and (b), red, green, and blue dots move as shown below.



If the blue dot does not converge with red and green dots, perform the following steps:

Move BMC magnet (a) to correct insufficient H. Static convergence.

Rotate BMC magnet (b) to correct insufficient V. Static convergence.

In either case, repeat Beam Landing Adjustment.

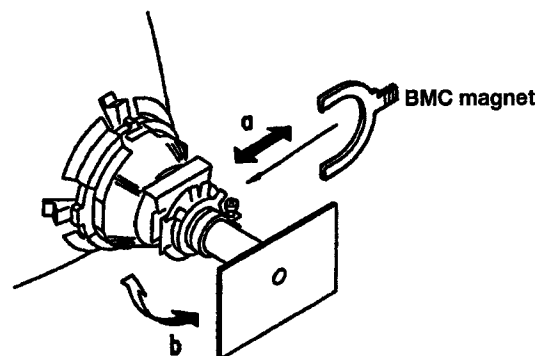


Fig. 6

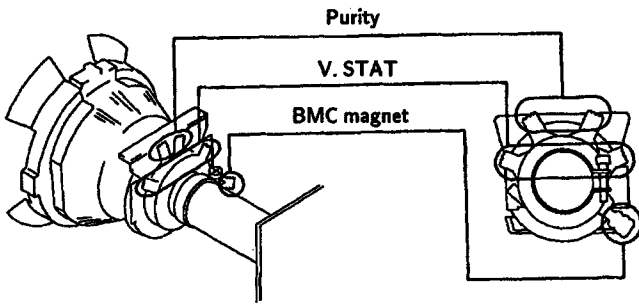


Fig. 7

(2) Dynamic Convergence Adjustment

Preparation:

- Before starting to perform Horizontal and Vertical Static Convergence Adjustment.
1. Slightly loosen deflection yoke screw.
 2. Remove deflection yoke spacers.
 3. Move the deflection yoke for best convergence as shown below.
 4. Tighten the deflection yoke screw.
 5. Install the deflection yoke spacers.

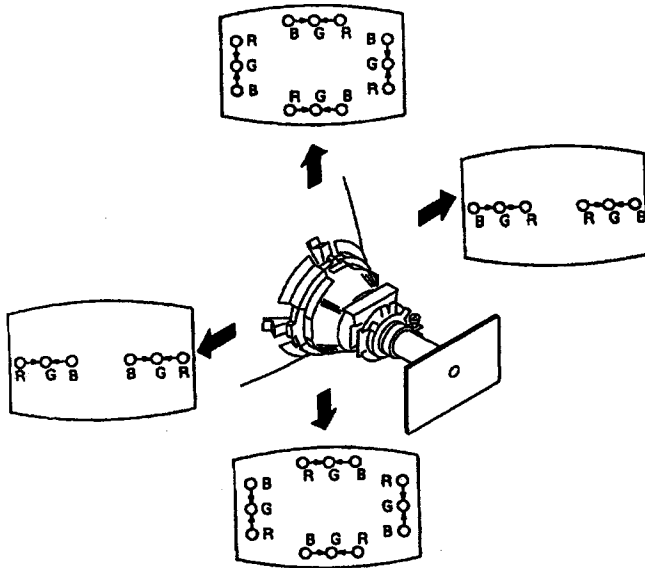


Fig. 8

(3) Screen-corner Convergence

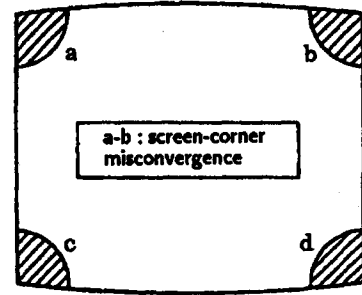
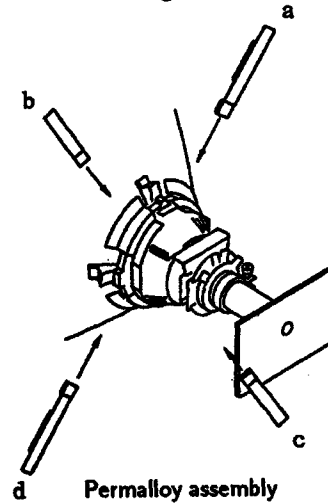


Fig. 9

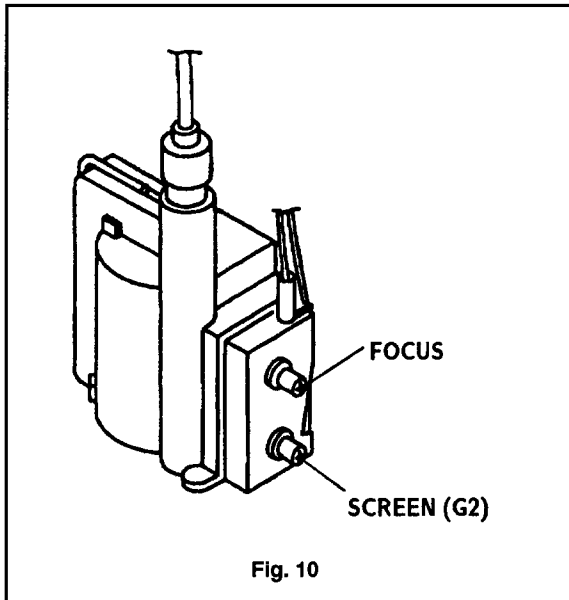


Affix a Permalloy ass'y corresponding to the misconverged areas



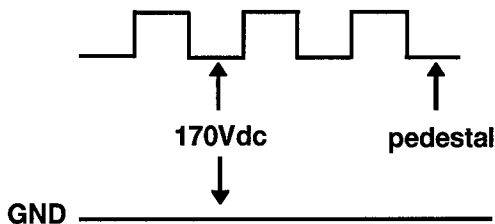
3-3. FOCUS

- Adjust FOCUS control for best picture.



3-4. SCREEN (G2)

- Input a dots pattern.
- Set the PICTURE and BRIGHT controls at minimum and COLOR control at normal.
- Adjust SBRT, GCUT, BCUT in service mode so that voltages on the red, green, and blue cathodes are 170Vdc with an oscilloscope as shown in Fig. 11.
- Observe the screen and adjust SCREEN (G2)VR to obtain the faintly visible background of dot signal.

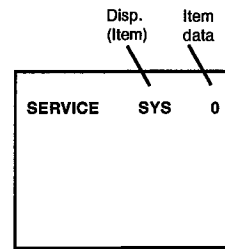


3-5. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

SERVICE MODE PROCEDURE

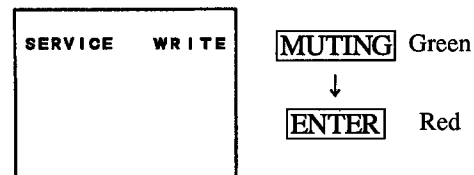
- Standby mode. (Power off)
- DISPLAY** → **5** → **VOL(+)** → **POWER** on the Remote Commander. (Press each button within a second.)

SERVICE ADJUSTMENT MODE IN



- The CRT displays the item being adjusted.
- Press **1** or **4** on the Remote Commander to select the item.
- Press **3** or **6** on the Remote Commander to change the data.
- Press **MUTING** then **ENTER** to write into memory.

SERVICE ADJUSTMENT MODE MEMORY



- Turn set off and on to exit.

3-6. WHITE BALANCE ADJUSTMENTS

- Input an entire white signal.
- Set to Service adjustment Mode.
- Set the PICTURE and BRIGHT to minimum.
- Adjust with SBRT if necessary.
- Select GCUT and BCUT with **1** and **4**.
- Adjust with **3** and **6** for the best white balance.
- Set the PICTURE and BRIGHT to maximum.
- Select GDRV and BDRV with **1** and **4**.
- Adjust with **3** and **6** for the best white balance.
- Write into the memory by pressing **MUTING** then **ENTER**.

SECTION 4 SAFETY RELATED ADJUSTMENTS

A BOARD

☒ R525 CONFIRMATION METHOD (HV HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

The following adjustments should always be performed when replacing the following components (marked with ☒ on the schematic diagram).

IC301, IC502, IC601, D505, D506, D507, D510, DY, C503, C511, C513, C528, R511, R519, R520, R523, R525, R527, R559, R560, R617, R618, T504 (FBT)

1. PREPARATION BEFORE CONFIRMATION

- 1) Turn the POWER switch ON. Input an entirely white signal and set the PICTURE and BRIGHT controls to maximum.
- 2) Confirm that the voltage at TP85 is more than 90VDC when the set is operating normally with 120.0 ± 2.0 VAC supply.

2. HOLD-DOWN OPERATION CONFIRMATION

- 1) Connect the current meter between Pin 11 of the FBT (T504) and the PCB land where Pin 11 would normally attach.
- 2) Input a white signal and adjust the ABL current to be $1440 \pm 100\mu\text{A}$ using the PICTURE and the BRIGHT controls.
- 3) Confirm the voltage of A board TP-91 is 113.2 ± 0.5 VDC
- 4) Connect the DC power supply via diode 1SS119 and Digital Voltmeter to TP-85.
- 5) Increase the DC power voltage gradually until the picture blanks out.
- 6) Read the digital voltmeter indication.
- 7) Turn DC power source off immediately.

STANDARD

Less than or equal to 127.3 VDC

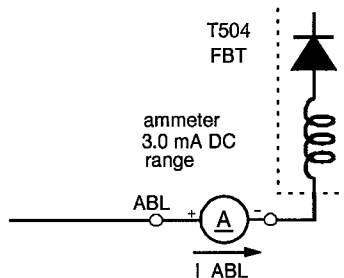
- 8) Input a dot signal and adjust the ABL current to be $95+100/-95\mu\text{A}$ using the PICTURE and the BRIGHT controls.
- 9) Confirm the voltage of A board TP-91 is 116.7 ± 0.5 VDC
- 10) Repeat steps from (4) to (7).

STANDARD

Less than or equal to 127.3 VDC

3. HOLD-DOWN READJUSTMENT

If the current setting indicated in step 2-2 cannot be met, readjustment should be performed by altering the resistance value of R525 (a component marked with ☒).

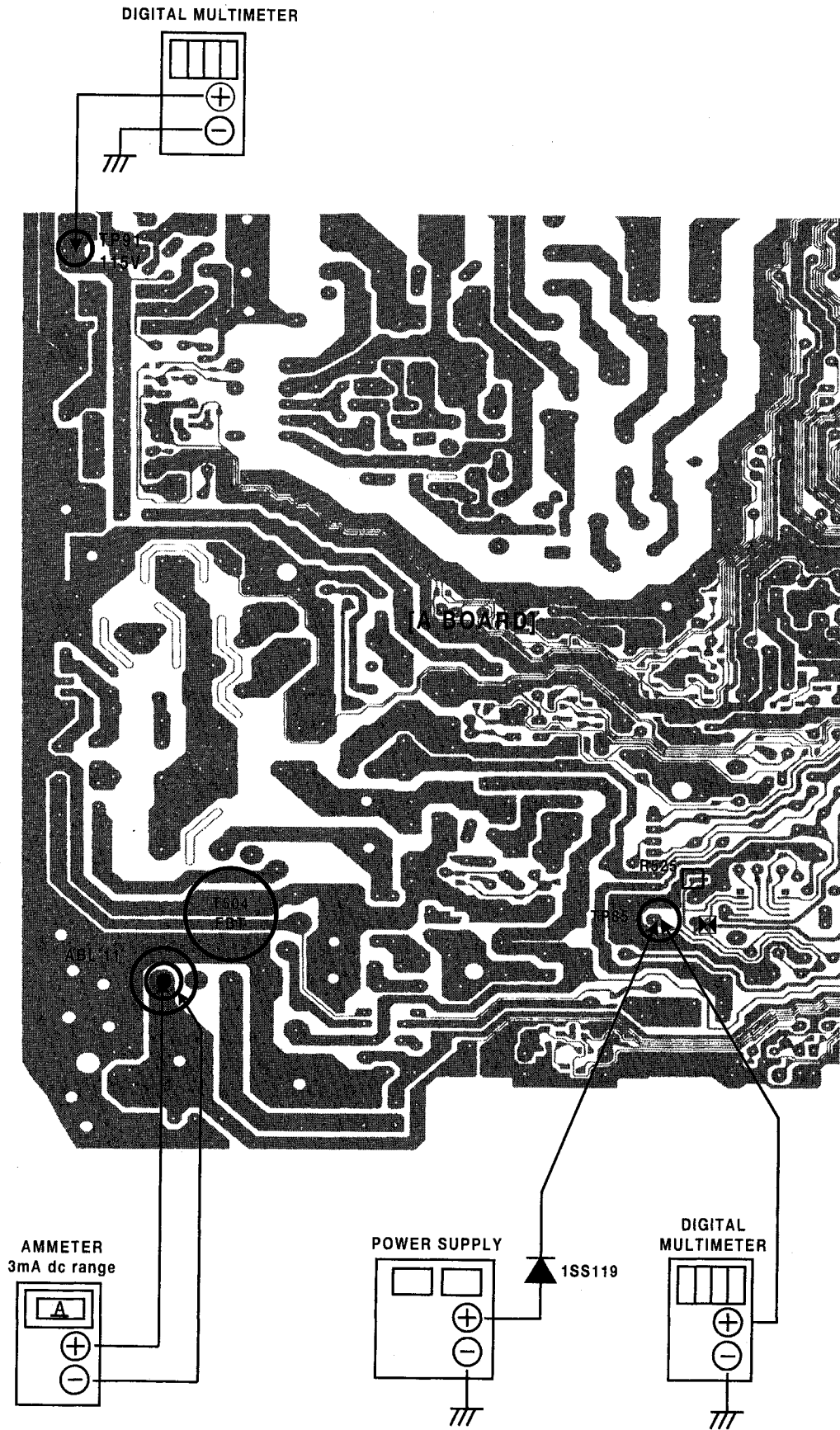


B+ VOLTAGE CONFIRMATION AND ADJUSTMENT

The following adjustments should always be performed when replacing the following components.

IC001, IC601, R030, R617, R618, R629, R630, R651, R652, R654, R655, R656

- 1) Supply 130 ± 2^0 V AC to the set with a variable auto transformer.
- 2) Input a dot signal.
- 3) Set the PICTURE control and the BRIGHT control to minimum condition.
- 4) Set to service adjustment mode.
- 5) Select PADJ with **[1]** and **[4]**.
- 6) Adjust with **[6]** to the 0 level.
- 7) Confirm the voltage of A BOARD TP-91 is less than 123.0V DC.
- 8) If step 7 is not satisfied, replace the components, repeat the above steps.
- 9) Supply 120.0 ± 2.0 VAC to the set with a variable auto transformer.
- 10) Adjust with **[3]** and **[6]** for the 116.7 ± 0.5 V DC.
- 11) Write into the memory by pressing **[MUTING]** then **[ENTER]**.



SECTION 5 CIRCUIT ADJUSTMENTS

5-1. ELECTRICAL ADJUSTMENT BY REMOTE COMMANDER

Use Remote Commander (RM-Y117) to perform circuit adjustments on this model.

NOTE : Test Equipment Required.

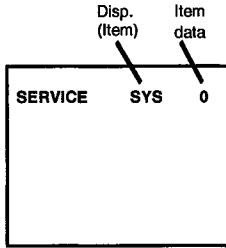
1. Pattern Generator
2. Frequency Counter
3. Digital Multimeter
4. Audio OSC

1. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

SERVICE MODE PROCEDURE

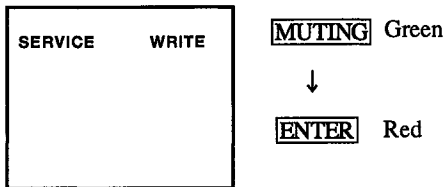
1. Standby mode. (Power off)
2. **DISPLAY** → **5** → **VOL (+)** → **POWER** on the Remote Commander. (Press each button within a second.)

SERVICE ADJUSTMENT MODE IN

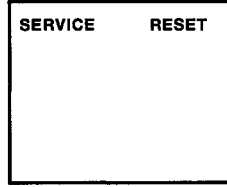


3. The CRT displays the item being adjusted.
4. Press **1** or **4** on the Remote Commander to select the item.
5. Press **3** or **6** on the Remote Commander to change the data.
6. Press **MUTING** then **ENTER** to write into memory.

SERVICE ADJUSTMENT MODE MEMORY



7. Press **8** then **ENTER** on the Remote Commander to initialize.



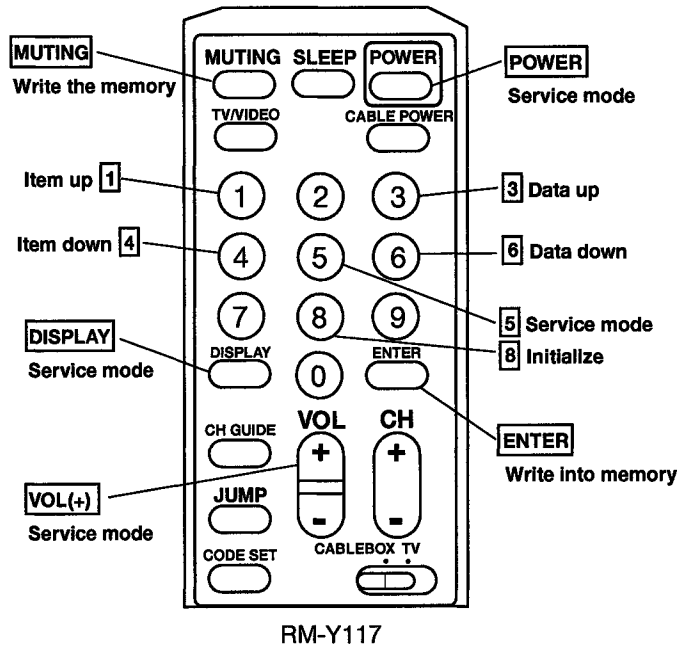
Carry out step 7 when adjusting IDs 0 to 4 and when replacing and adjusting IC003.

8. Turn set off and on to exit.

2. MEMORY WRITE CONFIRMATION METHOD

1. After adjustment, pull out the plug from the AC outlet, then replace the plug in the AC outlet again.
2. Turn the power switch ON and set to service mode.
3. Call the adjusted items again to confirm they were adjusted.

3. ADJUST BUTTONS AND INDICATOR



4. AN ITEM OF ADJUSTMENTS

No.	Disp.	Item	Data range	Avg. data
1	SYS	Color System	0~3	*1
2	AFC	AFC Loop Gain	0~3	*1
3	VPOS	V. Position	0~31	12
4	VSIZ	V. Size	0~63	23
5	VLIN	V. Linearity	0~15	8
6	VSCO	S. Correction	0~15	5
7	HPOS	H. Position	0~15	10
8	GDRV	Green-Drive	0~31	19
9	BDRV	Blue-Drive	0~31	16
10	GCUT	Green-Cutoff	0~15	6
11	BCUT	Blue Cut Off	0~15	8
12	TOT	Chroma TOT-Filter	0, 1	*1
13	NR	Noise Reduction	0, 1	*0
14	SCON	Sub-Contrast	0~15	8
15	SHUE	Sub-Hue	0~15	8
16	SCOL	Sub-Color	0~15	9
17	SBRT	Sub-Brightness	0~63	22
18	SSHP	Sub-Sharpness	0~15	*10
19	RON	Red-Off	0, 1	*1
20	GON	Green-Off	0, 1	*1
21	BON	Blue-Off	0, 1	*1
22	PREL	Pre-Over Shoot	0~7	*4
23	AXIS	Axis SW	0, 1	*1
24	DCOL	Dynamic-Color	0, 1	*0
25	REF	Reference-Position	0~3	*3
26	ABLM	ABL Mode	0~3	*2
27	CROM	Chroma Trap SW	0, 1	*0
28	OSDL	OSD Level	0, 1	*0
29	Y-DC	DC Transmission	0~7	*5
30	GMMA	Gamma	0~7	*0
31	VEXT	V Sync Extend	0, 1	*1
32	VZOM	HV Comp	0~7	*4
33	CDMD	V Countdown	0, 1	*0
34	RGBL	RGB Limit	0~3	*3
35	YDLY	Y Delay	0~3	*0
36	SBAL	Left-Volume	0~15	7
37	SBAS	Sub-Bass	0~15	7
38	STRE	Sub-Treble	0~15	7
39	PHOR	Horizontal Size	0~63	15
40	PE-W	E-W Correction	0~63	30
41	PCOR	E-W Corner	0~15	8
42	PTRP	Trap Correction	0~63	30
43	HCMP	H Compensation	0~15	8
44	DISP	Display Position	0~63	6
45	PADJ	B+ Adjustment	0~63	35
46	ID0	ID0	0~256	by Model
47	ID1	ID1	0~256	by Model
48	ID2	ID2	0~256	by Model
49	ID3	ID3	0~256	by Model
50	ID4	ID4	0~256	by Model

Note: No.1 through 50 show adjustment order.

SERVICE	ID0	25
---------	-----	----

Note: IC001 on circuit board A inputs a V. Sync signal to pin ⑤ and is always in operation. If a V. Sync signal is input to pin ⑤ there will be a waiting period of 2-4 seconds, and the power is shut off. When entering the service mode, the above function is cancelled and operation is possible.

Adjust the function values as shown below when IC003 on A board is replaced.

KV-20V60(U)

No.	Disp.	Data
46	ID0	25
47	ID1	19
48	ID2	31
49	ID3	1
50	ID4	31

KV-20V60(CND)

No.	Disp.	Data
46	ID0	9
47	ID1	19
48	ID2	31
49	ID3	1
50	ID4	31

* : Fixed value

5-2. A BOARD ADJUSTMENTS

RF AGC ADJUSTMENT (IF BLOCK VR)

1. Input a color-bar signal.
2. Adjust AGC VR of TU101 so that snow, noise, and cross-modulation disappear from the picture.
3. Verify picture quality on each channel.

H. FREQUENCY ADJUSTMENT

1. Input a monoscope signal.
2. Set to Service adjustment Mode.
3. Connect a frequency counter to base of Q550 (TP-86 H. DRIVE).
4. Select the item of AFC, set to 3 level (free run).
5. Check H. Frequency for the 15800 ± 100 Hz.
6. Select the item of AFC again, adjust the level "1".
7. Write into the memory by pressing **MUTING** then **ENTER**.

V. FREQUENCY ADJUSTMENT

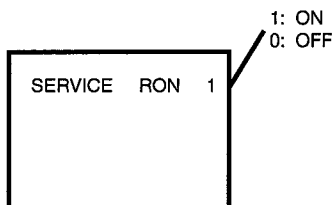
1. Select video 1 with no signal input.
2. Set the conditions with standard setting.
3. Connect the frequency counter across CN501 VDY (+) (pin 6) connector and ground.
4. Check V. Frequency for the 60 ± 2 Hz.

SUB CONTRAST ADJUSTMENT (SCON)

1. Input a color-bar signal.
2. Select the red color.
3. Set to Service adjustment Mode.
4. Select the item DCOL to "1" level.
5. Set the conditions as follows.

PICTURE MAX
 COLOR MIN
 BRIGHT CENTER

R ON ON (1)
 G ON OFF (0)
 B ON OFF (0)



6. Connect an oscilloscope to CN703 Pin ① (R OUT) of C board and ground.
7. Select SCON with **1** and **4**.
8. Adjust with **3** and **6** for: 1.8 ± 0.05 Vp-p.



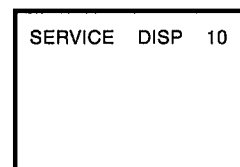
9. Reset the item DCOL to "0" level.
10. Write the memory by pressing **MUTING** then **ENTER**.
11. Return the following back to normal after adjustment.

PICTURE MAX
 COLOR CENTER
 BRIGHT CENTER

R ON ON (1)
 G ON ON (1)
 B ON ON (1)

DISPLAY POSITION ADJUSTMENT (DISP)

1. Input a color-bar signal.
2. Set to Service adjustment Mode.
3. Select DISP with **1** and **4**.
4. Adjust with **3** and **6** for adjustment of characters to center.
5. Write the memory by pressing **MUTING** then **ENTER**.
6. Check if the text is displayed on the screen.

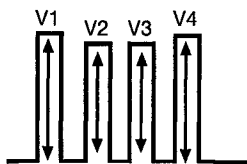


SUB BRIGHT ADJUSTMENT (SBRT)

1. Input a cross-hatch signal.
2. Set to Service adjustment Mode.
3. Set the PICTURE and BRIGHT to minimum.
4. Select SBRT with **[1]** and **[4]**.
5. Adjust with **[3]** and **[6]** to obtain a faintly visible cross-hatch.
6. Write into the memory by pressing **[MUTING]** then **[ENTER]**.

SUB HUE, SUB COLOR ADJUSTMENT (SHUE, SCOL)

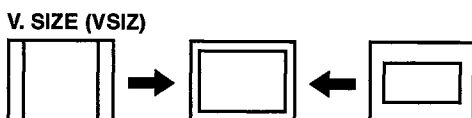
1. Input a color-bar signal.
2. Set to Service adjustment Mode.
3. Select the item DCOL and set to "1" level.
4. Connect an oscilloscope to CN703 Pin ③ (B OUT) of C board.
5. Select SHUE and SCOL with **[1]** and **[4]**.
6. Adjust with **[3]** and **[6]** for the $V1 = V4 \pm 0.1V_{p-p}$ (SCOL) and $V2 = V3 \pm 0.1V_{p-p}$ (SHUE).



7. After Sub-Color/Hue adjustment, increase 2 steps on (SCOL)
8. Reset the item DCOL to "0" level.
9. Write into the memory by pressing **[MUTING]** then **[ENTER]**.

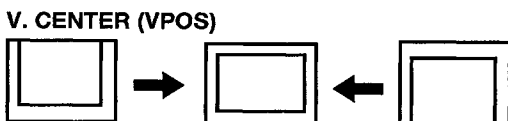
V. FREQUENCY ADJUSTMENT

1. Input a cross-hatch signal.
2. Set to Service adjustment Mode.
3. Select VSIZ with **[1]** and **[4]**.
4. Adjust with **[3]** and **[6]** for the best vertical size.



V. CENTER ADJUSTMENT (VPOS)

1. Input a cross-hatch signal.
2. Set to Service adjustment Mode.
3. Select VPOS with **[1]** and **[4]**.
4. Adjust with **[3]** and **[6]** for the best vertical center.
5. Write into the memory by pressing **[MUTING]** then **[ENTER]**.



H. CENTER ADJUSTMENT (HPOS)

Note : Perform this adjustment after checking H. FREQUENCY.

1. Input a cross-hatch signal.
2. Set the Service adjustment Mode.
3. Select HPOS with **[1]** and **[4]**.
4. Adjust with **[3]** and **[6]** for the best horizontal center.
5. Write into the memory by pressing **[MUTING]** then **[ENTER]**.

H. CENTER (HPOS)



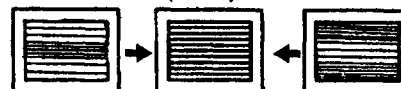
V. LINEARITY (VLIN) AND V CORRECTION (VSCO) ADJUSTMENTS.

1. Input a cross-hatch signal.
2. Set to Service adjustment Mode.
3. Select VLIN and VSCO with **[1]** and **[4]**.
4. Adjust with **[3]** and **[6]** for the best picture.
5. Write the memory by pressing **[MUTING]** then **[ENTER]**.

V LINEARITY (VLIN)

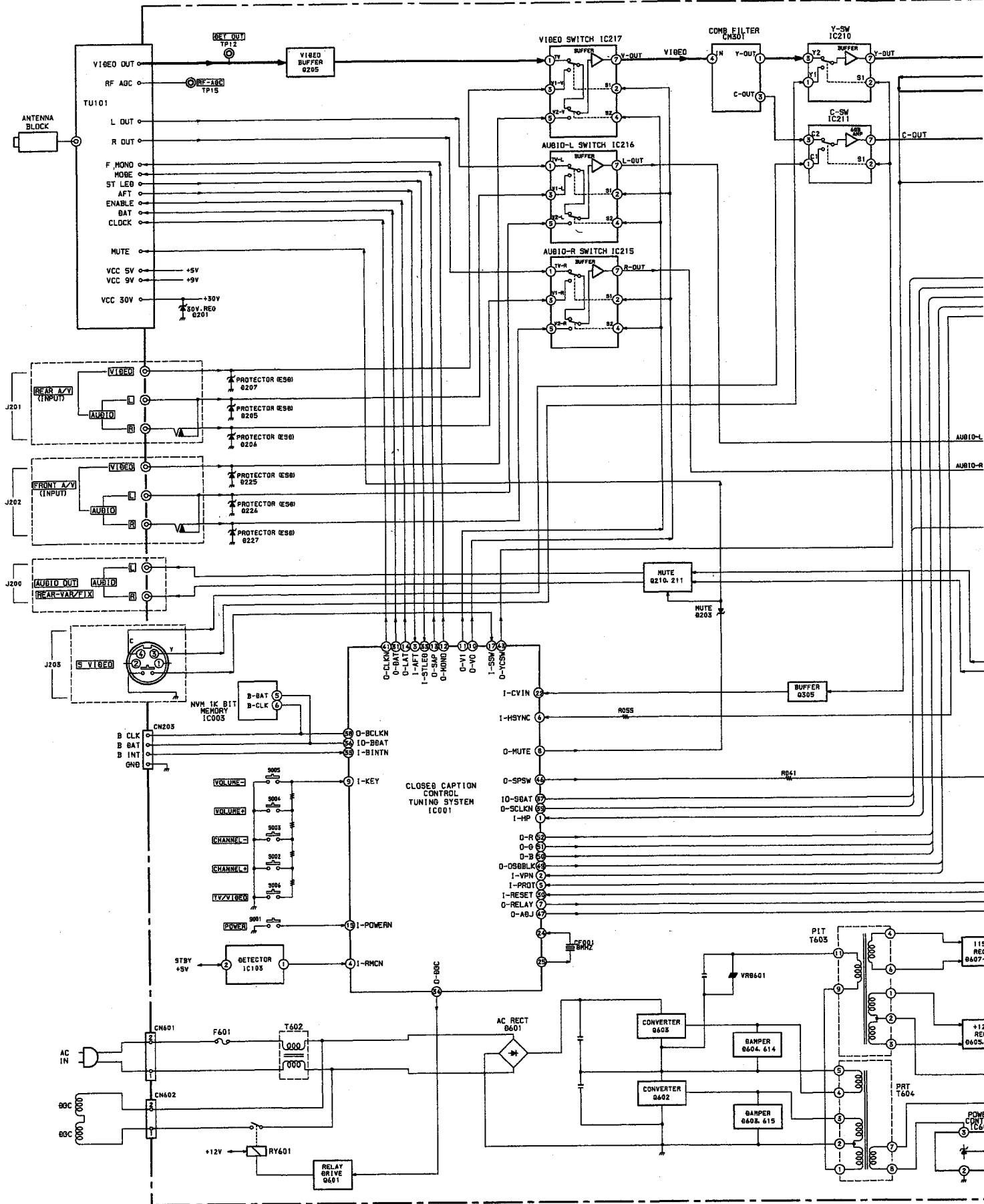


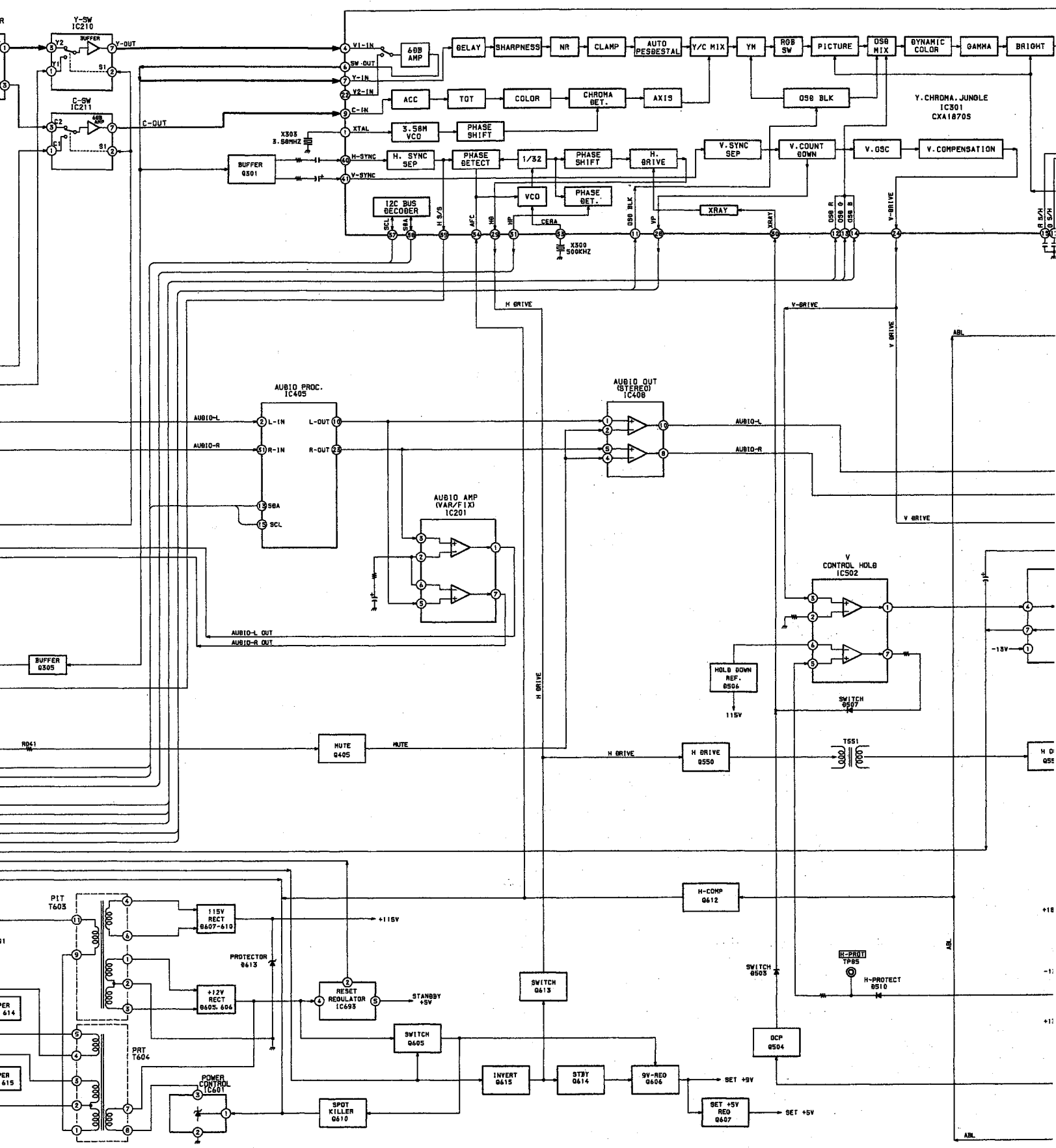
V CORRECTION (VSCO)

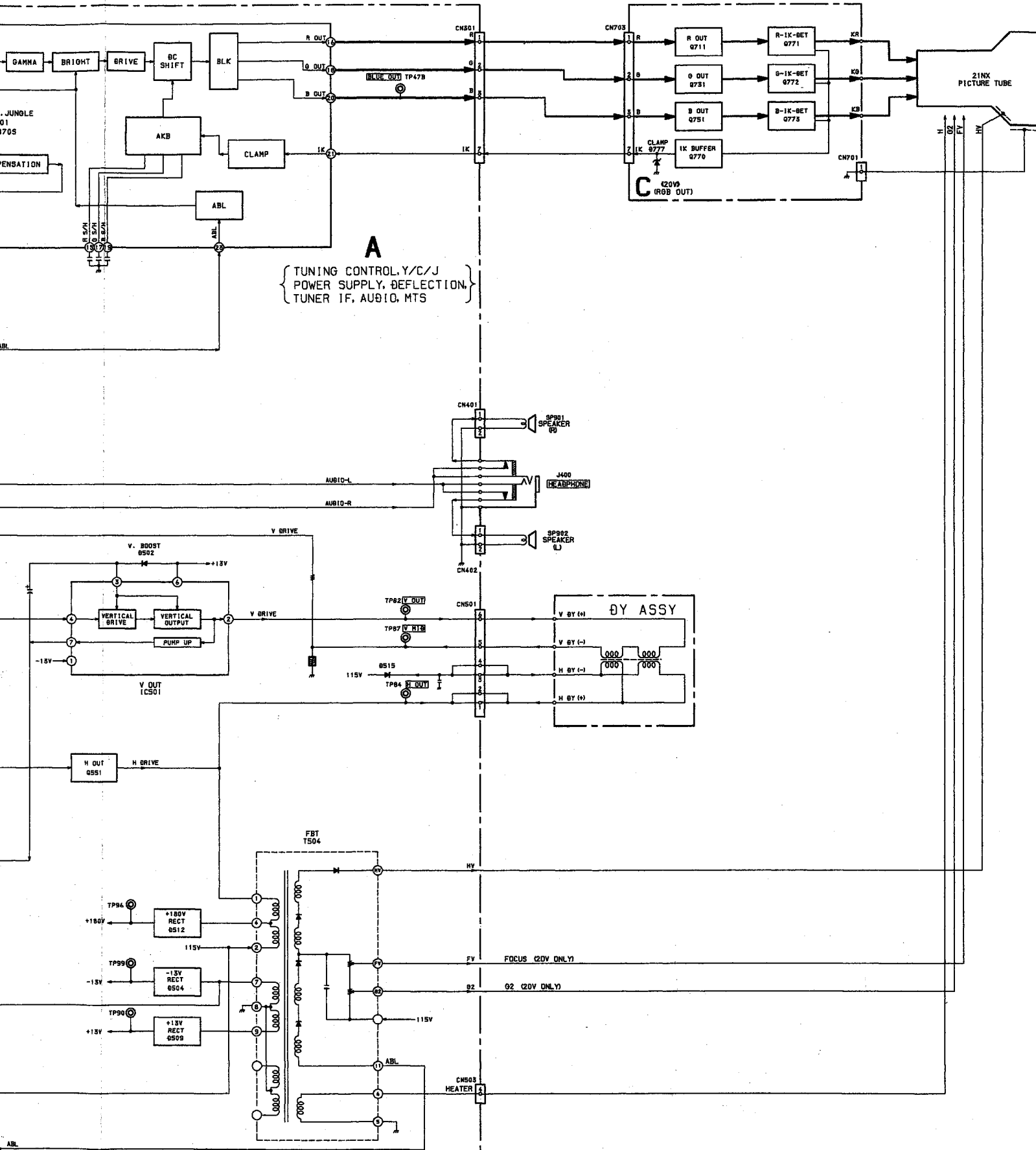


SECTION 6
DIAGRAMS

6-1. BLOCK DIAGRAM

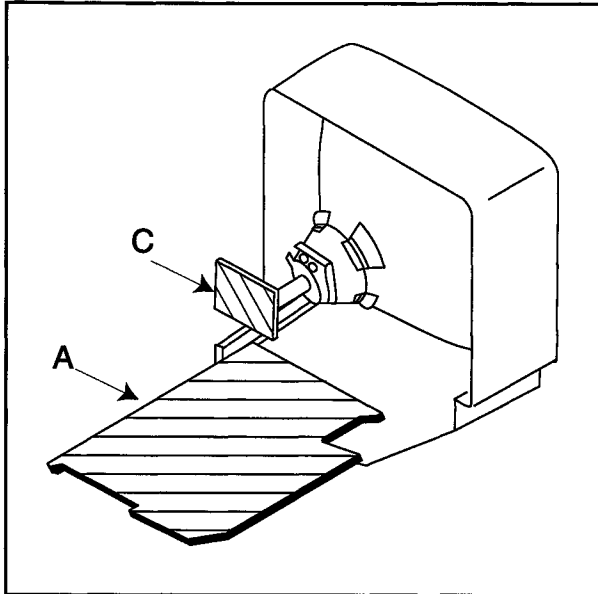






B-2V5005-BASCHAMSD-30

6-2. Circuit Boards Location










6-3. Printed Wiring Boards and Schematic Diagrams

Note:

- All capacitors are in μF unless otherwise noted. pF : $\mu\mu\text{F}$ 50WV or less are not indicated except for electrolytic and tantalums.
- All electrolytics are 50V unless otherwise specified
- Indication of resistance, which does not have one for rating electrical power, is as follows:


Pitch: 5mm
Rating electrical power 1/4W


- All resistors are in ohms.
 $\text{K}\Omega=1000\Omega$, $\text{M}\Omega=1000\text{K}\Omega$
-  nonflammable resistor.
- Δ : internal component.
- : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by  make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by  and repeat the adjustment until the specified value is achieved. (Refer to R525 on pages 16 & 17).
- When replacing parts in the table below be sure to perform the related adjustment.


Part replaced ()	Adjustment ()
IC301, IC502, IC601, D505, D506, D507, D510, DY, C503, C511, C513, C528, R511, R519, R520, R523, R525, R527, R559, R560, R617, R618, T504 (FBT)	HV HOLD-DOWN (R525)

IC001, IC601, R030, R617, R618, R629, R630, R651, R652, R654, R655, R656	B+ VOLTAGE CONFIRMATION
--	-------------------------


- All voltages are in V.
- Voltage is DC with respect to ground unless otherwise noted.
- Readings are taken with a $10\text{M}\Omega$ digital multimeter.
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerance.
- Circled numbers are waveform references.

•  : B + Line

•  : B - Line


•  : signal path

Reference Information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NON FLAMMABLE CARBON
	: FUSE	NON FLAMMABLE FUSIBLE
	: RW	NON FLAMMABLE WIREWOUND
	: RS	NON FLAMMABLE METAL OXIDE
	: RB	NON FLAMMABLE CEMENT
	: 	ADJUSTMENT RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

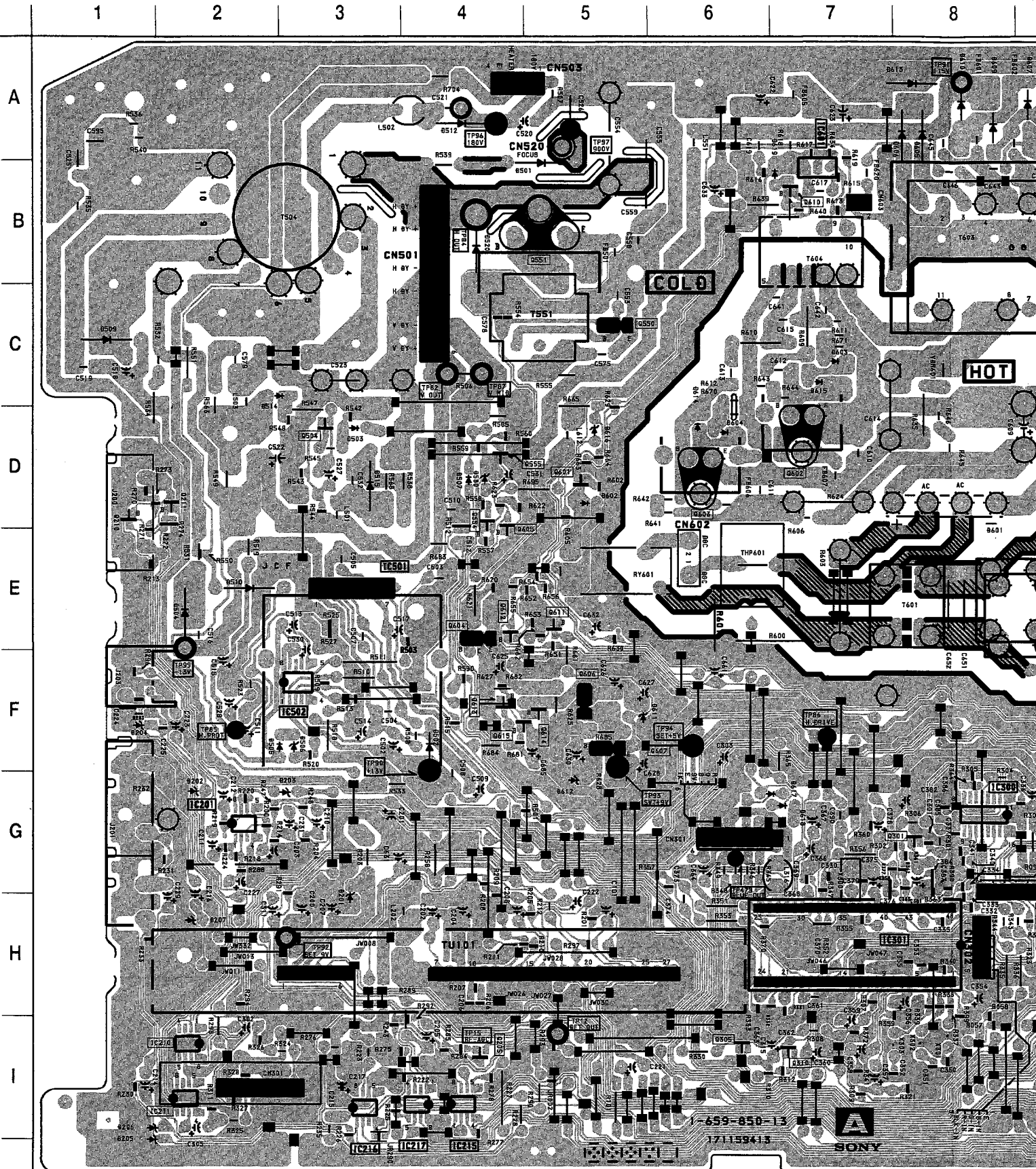
Note: The symbol  display is on the component side.

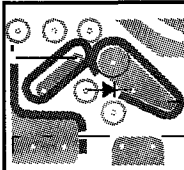
The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

The symbol  indicates fast operating fuse. Replace only with fuse of same rating as marked.

A TUNING CONTROL, Y/C/J,
POWER SUPPLY, DEFLECTION,
TUNER/IF, AUDIO MTS

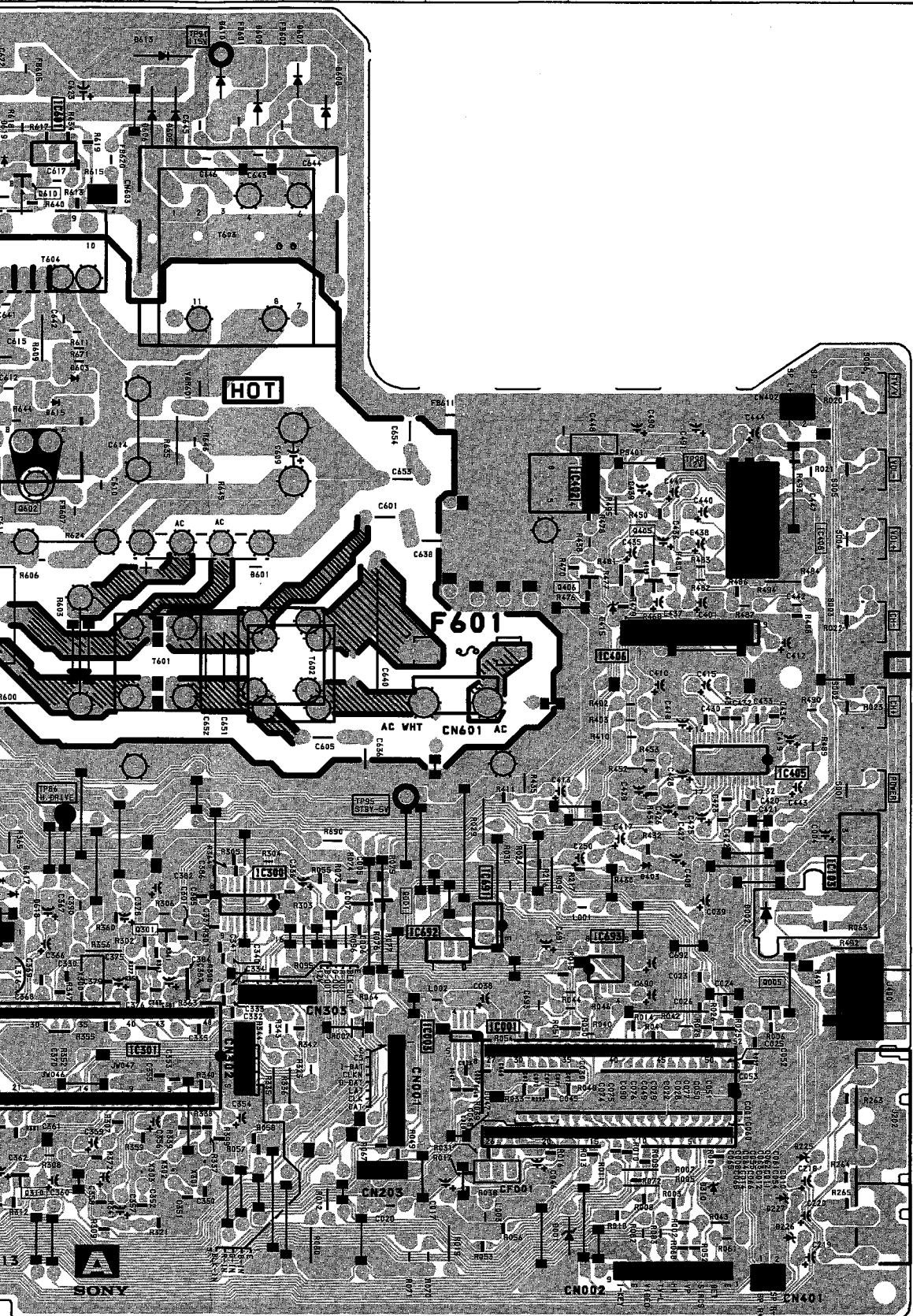
— A BOARD —





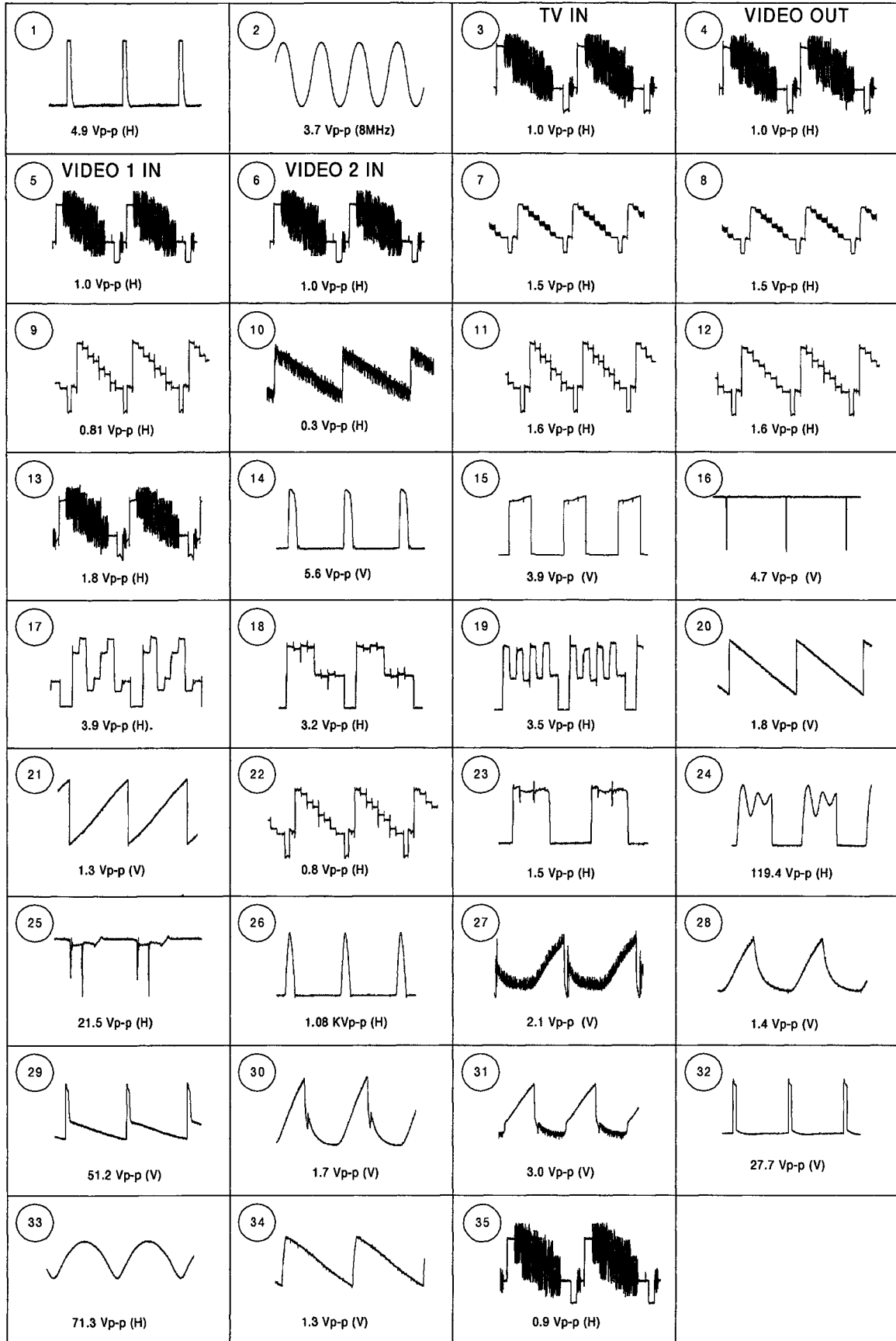
NOTE:
Portions of the circuit marked as shown are high voltage areas. Use care to prevent electric shocks during inspection or repair.

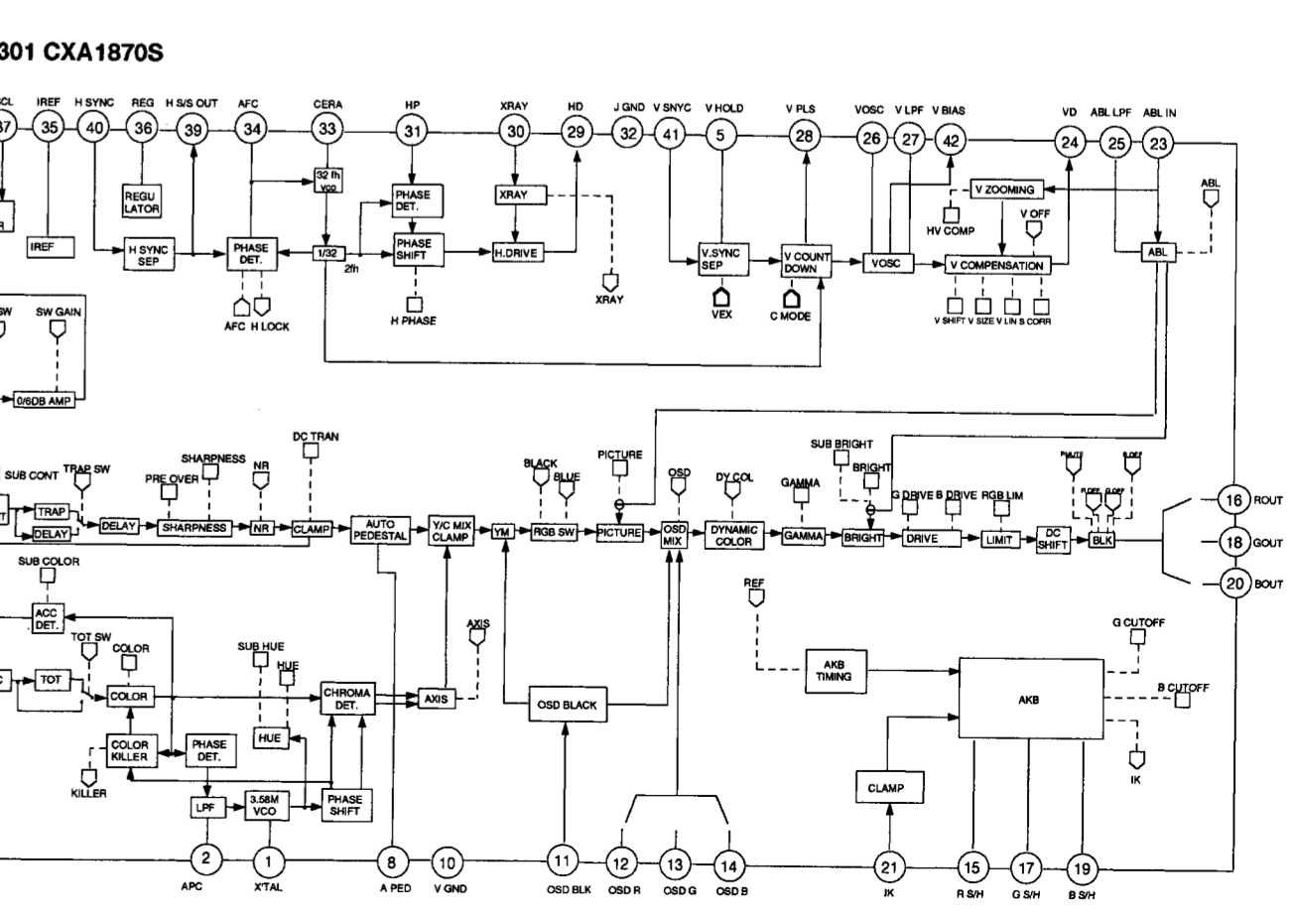
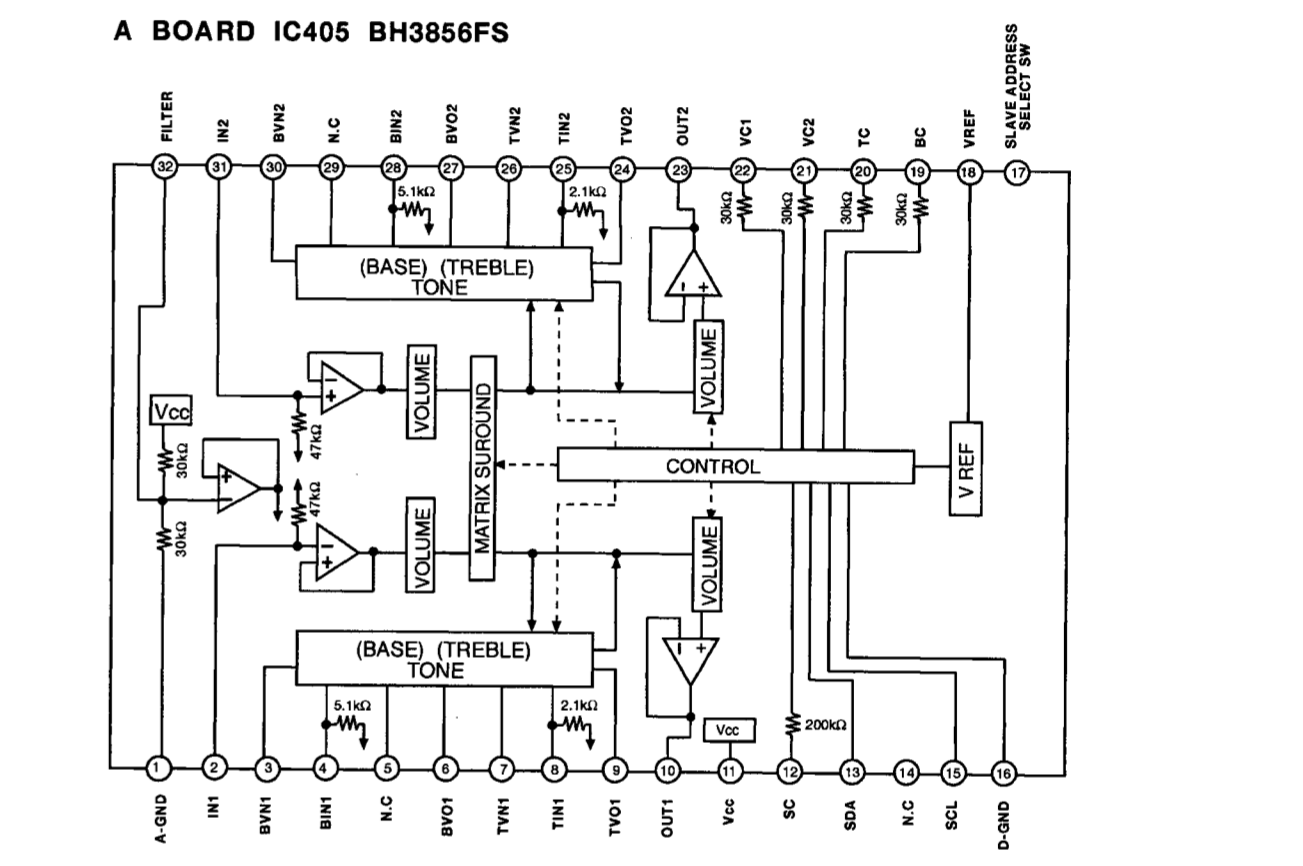
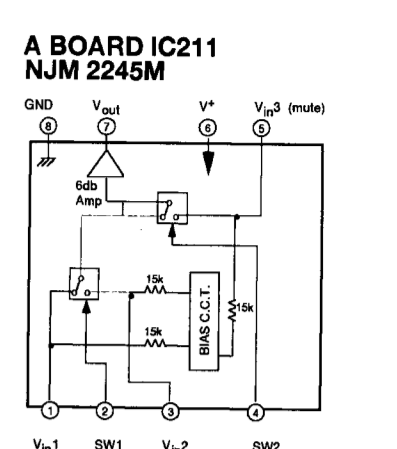
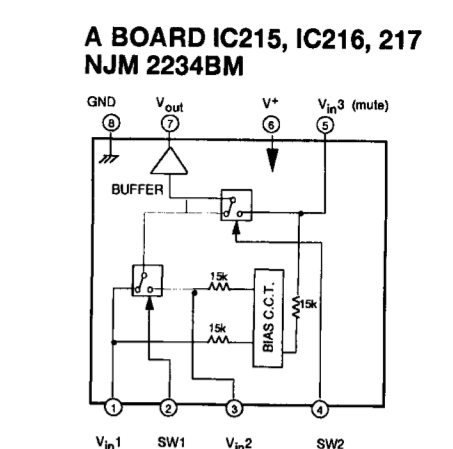
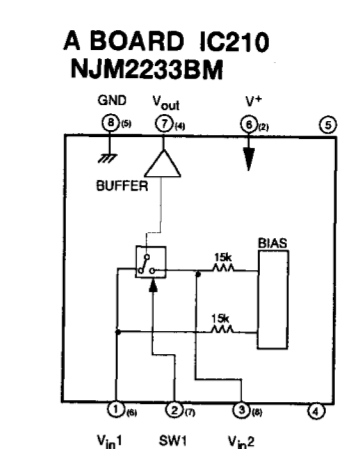
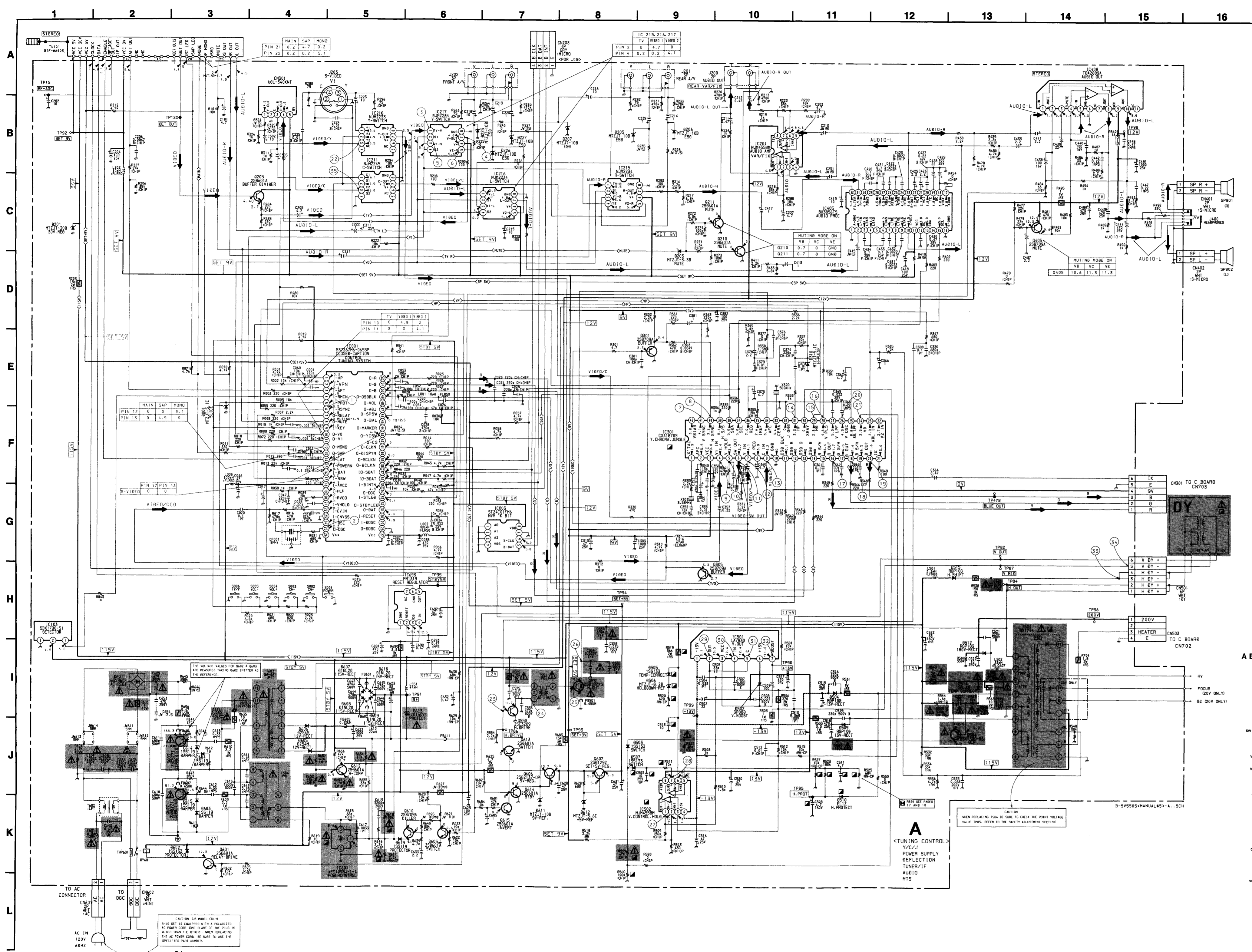
7 8 9 10 11 12

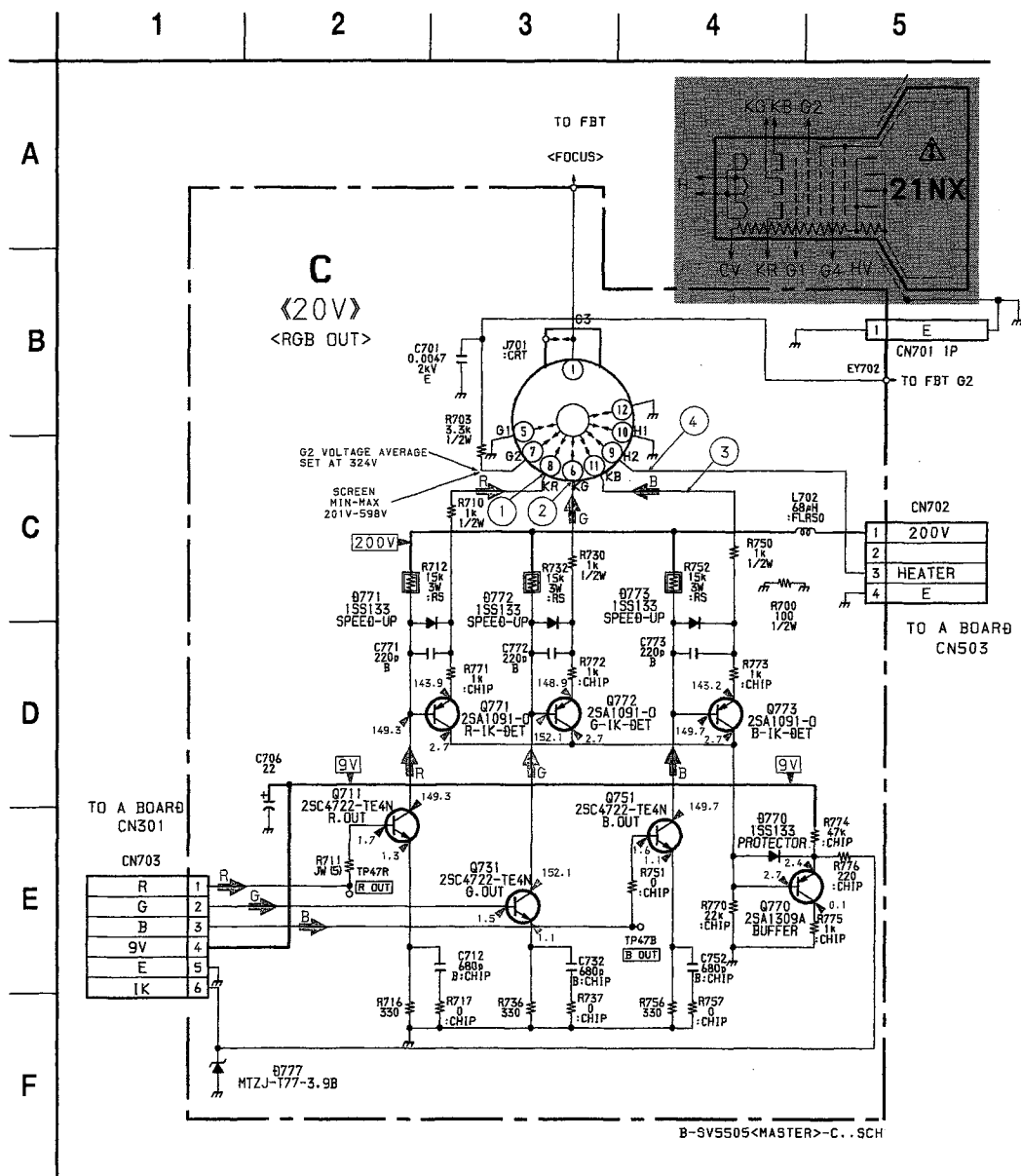


IC		DIODE	
IC001	H-10	D001	I-10
IC003	H-9	D201	H-3
IC103	G-12	D203	G-3
IC201	G-2	D205	I-1
IC210	I-2	D206	I-1
IC211	I-2	D207	H-2
IC215	J-4	D225	I-12
IC216	J-3	D226	I-12
IC217	J-4	D227	I-12
IC301	H-7	D310	I-11
IC405	F-12	D502	F-4
IC408	E-12	D503	D-3
IC501	E-3	D504	E-2
IC502	F-3	D505	F-2
IC601	A-7	D506	F-3
IC693	G-11	D507	D-4
CM301	I-2	D509	C-1
TRANSISTOR			
Q205	I-4	D510	E-2
Q210	D-1	D512	A-4
Q211	D-2	D514	C-2
Q301	G-8	D515	D-3
Q305	I-6	D601	D-8
Q405	D-11	D602	D-5
Q504	D-3	D603	C-7
Q550	C-5	D604	D-6
Q551	B-5	D605	A-8
Q601	D-5	D606	A-7
Q602	D-7	D607	A-9
Q603	D-6	D608	A-9
Q605	D-4	D609	A-8
Q606	F-5	D610	A-8
Q607	F-6	D611	F-5
Q610	B-7	D612	G-5
Q612	E-4	D613	A-8
Q613	F-4	D614	C-6
Q614	F-4	D615	C-7
Q615	F-5	D619	A-6

. A BOARD WAVEFORMS



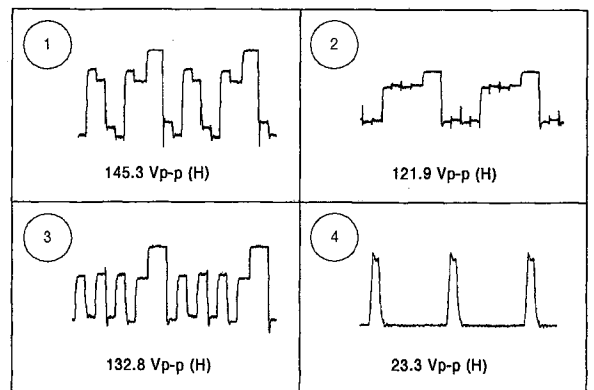
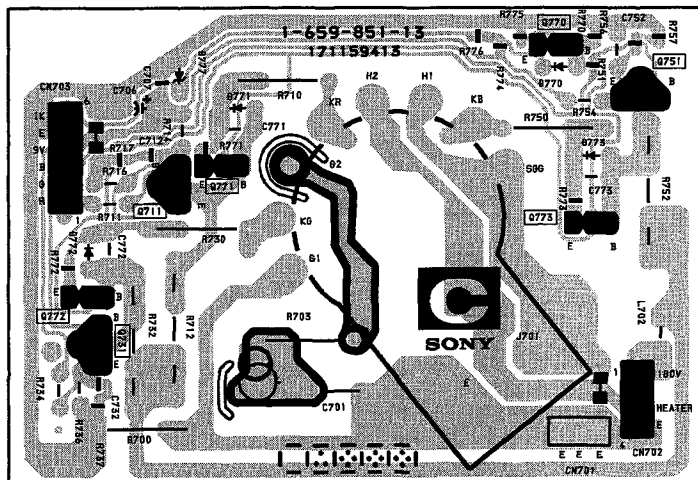




C [RGB OUT]

— C BOARD —

• C BOARD WAVEFORMS

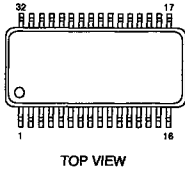


Schematic diagram

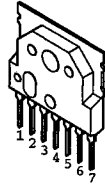
← **A** board

6-4. SEMICONDUCTORS

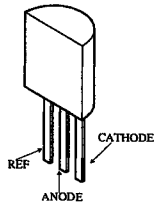
BH3856FS



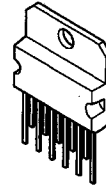
LA7830



uPC1093J-1-T

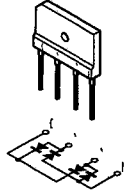


TDA2009A

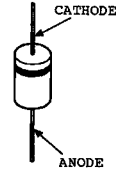


- 1SS119-25TD
- 1SS133T-77
- MTZJ-T-77-10B
- MTZJ-T-77-2.2
- MTZJ-T-77-3.3B
- MTZJ-T-77-30D
- MTZJ-T-77-5.1C
- MTZJ-T-77-5.6C
- MTZJ-T-77-8.2B

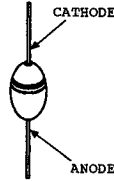
D3SB60F



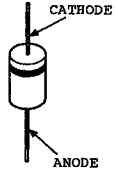
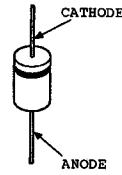
D1N120-TA
EL1Z-V1
RGP10GPKG3



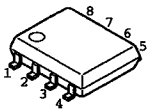
GP08DPKG3



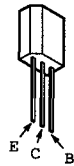
D2S4MTA1



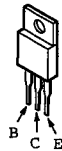
NJM2245M-TE2
NJM2233BM(Te2)
NJM2234(Te2)
NJM4558M-TE2



2SD2137-OP-TA



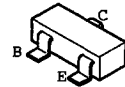
2SD1877S-SONY-CA



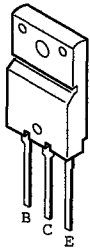
2SC3209LK-TP
2SD1292



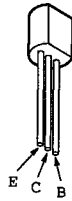
2SA1330-T106
2SB709A-QRS-TX
2SD601A-QRS-TX



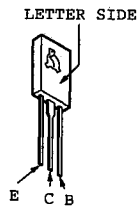
2SC5271-ROYG-F



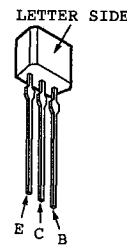
2SA1091-0



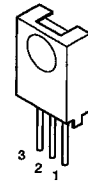
2SC2611



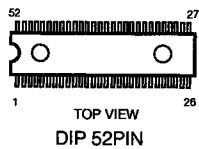
2SA1175-HFE



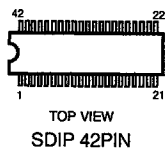
SBX1790-51



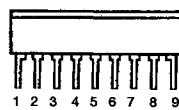
M37267M6 - 059SP



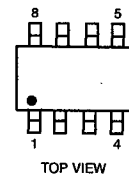
CXA1870S



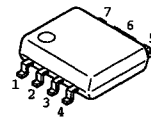
uPC1406HA



ST24C01FM6TR



MM1319



SECTION 7 EXPLODED VIEWS

NOTE :

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled parts are indicated with a collation number in the remark column.

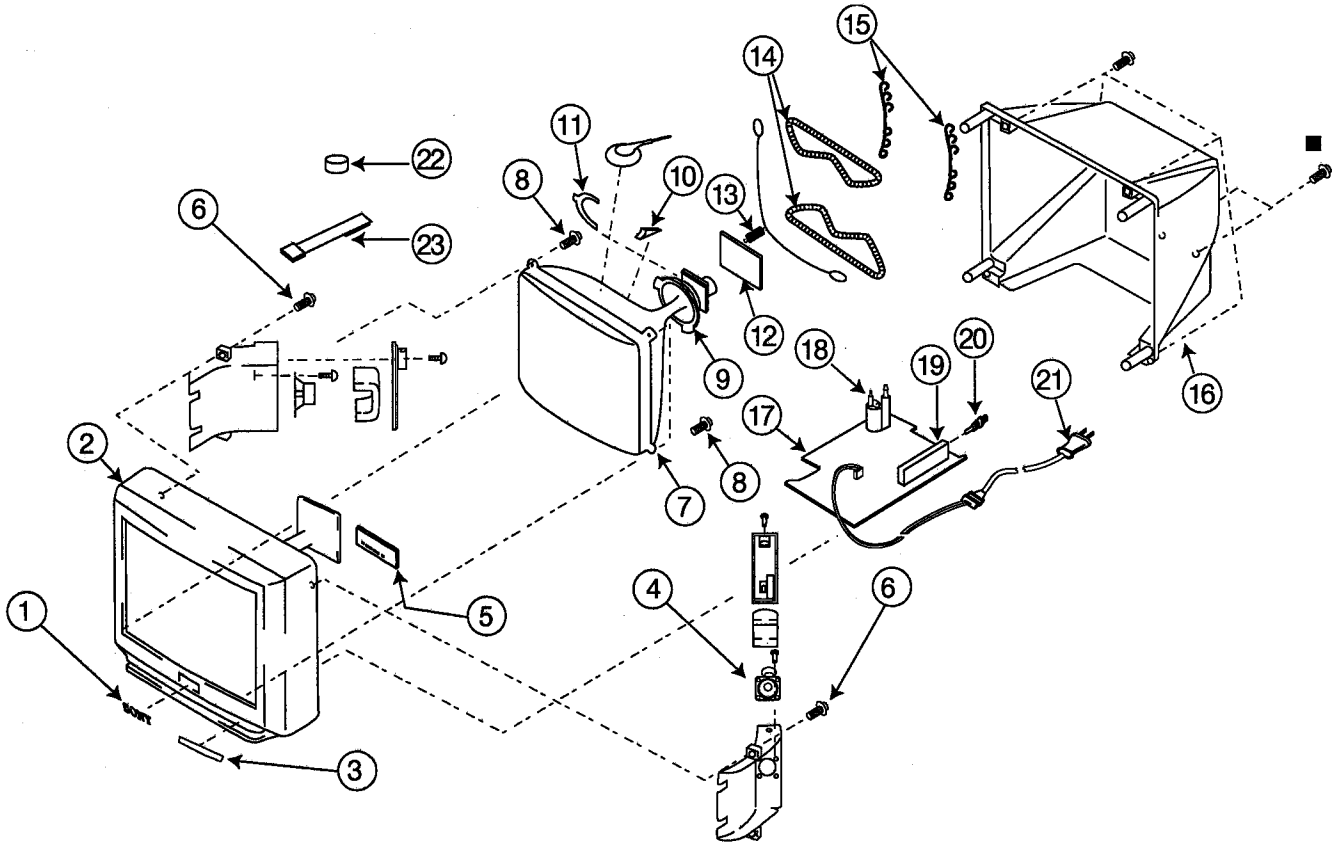
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

7-1. CHASSIS

■ BVTP 4x16 7-685-663-79



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
1	4-046-161-01	EMBLEM (NO.8) SONY		11	1-452-277-00	MAGNET, EMC	
2	X-4033-711-1	BEZNET, ASSY		12	* A-1331-518-A	MOUNTED PCB, C	
3	4-055-054-01	DOOR, CONTROL		13	4-375-394-01	SPRING, TENSION	
4	1-505-404-11	SPEAKER (8CM)		14	1-409-707-31	COIL, DEMAGNETIZATION	
5	4-054-278-01	BUTTON, MULTI		15	4-369-319-11	BAND, DEGAUSSING COIL	
6	4-384-096-01	SCREW(4X16) TAPPING+P		16	4-054-277-01	REAR COVER	
7	Δ 8-738-768-05	RYT 21IN 151LDG50X		17	* A-1297-841-A	COMPLETE (PCB,A)	
8	4-365-808-01	SCREW (5), TAPPING		18	Δ 1-452-241-11	TRANSFORMER ASSY, FLYBACK (RX1744)	
9	Δ 8-451-440-11	BY Y2100XA		19	8-598-341-00	TUNER BTF-WA405	
10	4-053-005-01	SPACER, DY		20	1-766-374-11	PLUG, F PIN	
				21	1-751-057-11	CORD, POWER (WITH CONNECTOR) 10A/125V	



SECTION 8 ELECTRICAL PARTS LIST

Note:

The components identified by shading and mark **Δ** are critical for safety.
Replace only with part number specified.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS

MF : μ F, PF : μ μ F

COILS

MMH : mH, μ H : μ H

- The components identified by **Δ** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
* A-1297-841-A	COMPLETE PCB, A			C202	1-126-964-11	ELECT	10MF 20% 50V
*****				C203	1-126-963-11	ELECT	4.7MF 20% 50V
* 1-900-800-66	CONNECTOR ASSY, 4P MINI MICRO			C204	1-104-665-11	ELECT	100MF 20% 25V
* 1-900-800-67	CONNECTOR ASSY, 6P MINI MICRO			C205	1-126-963-11	ELECT	4.7MF 20% 50V
	4-382-854-11	SCREW (M3X10), P, SW (+)		C206	1-163-017-00	CERAMIC CHIP	0.0047MF 10% 50V
	4-382-854-11	SCREW (M3X10), P, SW (+)		C211	1-124-902-00	ELECT	0.47MF 20% 50V
	7-682-949-01	SCREW +PSW 3X10		C212	1-124-902-00	ELECT	0.47MF 20% 50V
	<CAPACITOR>			C214	1-124-903-11	ELECT	1MF 20% 50V
C001	1-163-125-00	CERAMIC CHIP	220pF 5% 50V	C215	1-126-964-11	ELECT	10MF 20% 50V
C008	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	C216	1-126-964-11	ELECT	10MF 20% 50V
C010	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	C218	1-126-964-11	ELECT	10MF 20% 50V
C011	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	C219	1-124-903-11	ELECT	1MF 20% 50V
C012	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	C220	1-124-903-11	ELECT	1MF 20% 50V
C014	1-164-004-11	CERAMIC CHIP	0.1MF 10% 25V	C221	1-124-903-11	ELECT	1MF 20% 50V
C017	1-124-903-11	ELECT	1MF 20% 50V	C222	1-124-903-11	ELECT	1MF 20% 50V
C019	1-163-135-00	CERAMIC CHIP	560pF 5% 50V	C223	1-126-964-11	ELECT	10MF 20% 50V
C020	1-137-399-11	FILM	0.1MF 5% 50V	C224	1-164-232-11	CERAMIC CHIP	0.01MF 10% 50V
C023	1-163-125-00	CERAMIC CHIP	220pF 5% 50V	C225	1-164-232-11	CERAMIC CHIP	0.01MF 10% 50V
C024	1-163-125-00	CERAMIC CHIP	220pF 5% 50V	C227	1-126-963-11	ELECT	4.7MF 20% 50V
C025	1-163-125-00	CERAMIC CHIP	220pF 5% 50V	C229	1-124-903-11	ELECT	1MF 20% 50V
C026	1-163-243-11	CERAMIC CHIP	47pF 5% 50V	C301	1-163-251-11	CERAMIC CHIP	100pF 5% 50V
C028	1-163-005-11	CERAMIC CHIP	470pF 10% 50V	C302	1-126-964-11	ELECT	10MF 20% 50V
C030	1-163-125-00	CERAMIC CHIP	220pF 5% 50V	C303	1-126-942-61	ELECT	1000MF 20% 25V
C034	1-163-037-11	CERAMIC CHIP	0.022MF 10% 50V	C305	1-126-964-11	ELECT	10MF 20% 50V
C037	1-164-161-11	CERAMIC CHIP	0.0022MF 10% 50V	C311	1-104-664-11	ELECT	47MF 20% 25V
C038	1-126-941-11	ELECT	470MF 20% 25V	C315	1-104-664-11	ELECT	47MF 20% 25V
C046	1-104-664-11	ELECT	47MF 20% 25V	C330	1-163-007-11	CERAMIC CHIP	680pF 10% 50V
C047	1-163-125-00	CERAMIC CHIP	220pF 5% 50V	C352	1-163-229-11	CERAMIC CHIP	12pF 5% 50V
C048	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	C353	1-163-005-11	CERAMIC CHIP	470pF 10% 50V
C050	1-163-251-11	CERAMIC CHIP	100pF 5% 50V	C354	1-124-902-00	ELECT	0.47MF 20% 50V
C051	1-163-251-11	CERAMIC CHIP	100pF 5% 50V	C355	1-164-232-11	CERAMIC CHIP	0.01MF 10% 50V
C052	1-163-251-11	CERAMIC CHIP	100pF 5% 50V	C356	1-126-934-11	ELECT	220MF 20% 16V
C053	1-163-251-11	CERAMIC CHIP	100pF 5% 50V	C357	1-124-464-11	ELECT	0.22MF 20% 50V
C060	1-163-005-11	CERAMIC CHIP	470pF 10% 50V	C358	1-124-902-00	ELECT	0.47MF 20% 50V
C101	1-126-963-11	ELECT	4.7MF 20% 50V	C359	1-124-902-00	ELECT	0.47MF 20% 50V
				C360	1-126-963-11	ELECT	4.7MF 20% 50V
				C361	1-137-399-11	FILM	0.1MF 5% 50V

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C362	1-137-399-11	FILM	0.1MF 5% 50V	C503	1-107-698-11	ELECT	10MF 20% 25V
C363	1-137-399-11	FILM	0.1MF 5% 50V	C504	1-130-489-00	FILM	0.033MF 5% 50V
C364	1-124-902-00	ELECT	0.47MF 20% 50V	C505	1-102-963-00	CERAMIC	33pF 5% 50V
C366	1-124-903-11	ELECT	1MF 20% 50V	C507	1-102-038-00	CERAMIC	0.001MF 500V
C367	1-126-963-11	ELECT	4.7MF 20% 50V	C508	1-102-038-00	CERAMIC	0.001MF 500V
C368	1-136-169-00	FILM	0.22MF 5% 50V	C509	1-126-968-11	ELECT	100MF 20% 50V
C369	1-163-037-11	CERAMIC CHIP	0.022MF 10% 50V	C510	1-108-702-11	MYLAR	0.068MF 10% 100V
C373	1-137-370-11	FILM	0.01MF 5% 50V	C511	1-126-963-11	ELECT	4.7MF 20% 50V
C374	1-163-125-00	CERAMIC CHIP	220pF 5% 50V	C512	1-163-031-11	CERAMIC CHIP	0.01MF 50V
C375	1-126-963-11	ELECT	4.7MF 20% 50V	C513	1-126-964-11	ELECT	10MF 20% 50V
C376	1-164-232-11	CERAMIC CHIP	0.01MF 10% 50V	C514	1-104-664-11	ELECT	47MF 20% 25V
C378	1-124-925-11	ELECT	2.2MF 20% 50V	C515	1-126-941-11	ELECT	470MF 20% 25V
C379	1-164-232-11	CERAMIC CHIP	0.01MF 10% 50V	C516	1-102-244-00	CERAMIC	220pF 10% 500V
C381	1-124-903-11	ELECT	1MF 20% 50V	C517	1-126-941-11	ELECT	470MF 20% 25V
C382	1-104-665-11	ELECT	100MF 20% 25V	C518	1-126-941-11	ELECT	470MF 20% 25V
C383	1-163-017-00	CERAMIC CHIP	0.0047MF 10% 50V	C519	1-102-244-00	CERAMIC	220pF 10% 500V
C390	1-137-399-11	FILM	0.1MF 5% 50V	C520	1-107-652-11	ELECT	10MF 20% 250V
C413	1-124-903-11	ELECT	1MF 20% 50V	C521	1-102-244-00	CERAMIC	220pF 10% 500V
C417	1-124-903-11	ELECT	1MF 20% 50V	C522	1-123-024-21	ELECT	33MF 160V
C418	1-104-665-11	ELECT	100MF 20% 25V	C523 Δ 1-136-105-00 FILM 0.33MF 5% 200V			
C419	1-126-964-11	ELECT	10MF 20% 50V	C525	1-106-387-00	MYLAR	0.068MF 10% 200V
C420	1-163-038-91	CERAMIC CHIP	0.1MF 25V	C527 Δ 1-126-963-11 ELECT 22MF 20% 50V			
C421	1-163-038-91	CERAMIC CHIP	0.1MF 25V	C528	1-107-635-11	ELECT	4.7MF 20% 160V
C422	1-164-161-11	CERAMIC CHIP	0.0022MF 10% 50V	C530	1-104-664-11	ELECT	47MF 20% 25V
C423	1-164-161-11	CERAMIC CHIP	0.0022MF 10% 50V	C553	1-102-228-00	CERAMIC	470pF 10% 500V
C425	1-124-925-11	ELECT	2.2MF 20% 50V	C554 Δ 1-109-881-11 FILM 0.0057MF 3% 2KV			
C426	1-124-925-11	ELECT	2.2MF 20% 50V	C555 Δ 1-162-115-00 CERAMIC 330pF 10% 2KV			
C427	1-164-489-11	CERAMIC CHIP	0.22MF 10% 16V	C558	1-106-371-00	MYLAR	0.015MF 10% 100V
C428	1-126-965-11	ELECT	22MF 20% 50V	C559 Δ 1-162-115-00 CERAMIC 330pF 10% 2KV			
C429	1-104-665-11	ELECT	100MF 20% 25V	C575	1-106-371-00	MYLAR	0.015MF 200V
C430	1-164-005-11	CERAMIC CHIP	0.47MF 25V	C579 Δ 1-106-367-00 MYLAR 0.01MF 10% 200V			
C431	1-164-161-11	CERAMIC CHIP	0.0022MF 10% 50V	C601 Δ 1-113-920-11 ELECT 0.0022MF 20% 250V			
C432	1-164-161-11	CERAMIC CHIP	0.0022MF 10% 50V	C605 Δ 1-113-920-11 ELECT 0.0022MF 20% 250V			
C433	1-163-038-91	CERAMIC CHIP	0.1MF 25V	C609 Δ 1-104-759-11 ELECT 470MF 20% 200V			
C434	1-163-038-91	CERAMIC CHIP	0.1MF 25V	C610	1-164-625-11	CERAMIC	680pF 10% 500V
C435	1-124-925-11	ELECT	2.2MF 20% 50V	C611	1-164-625-11	CERAMIC	680pF 10% 500V
C437	1-124-925-11	ELECT	2.2MF 20% 50V	C612	1-136-171-00	FILM	0.33MF 5% 50V
C438	1-126-933-11	ELECT	100MF 20% 16V	C613	1-136-171-00	FILM	0.33MF 5% 50V
C439	1-126-965-11	ELECT	22MF 20% 50V	C614 Δ 1-136-759-11 FILM 0.039MF 5% 330V			
C440	1-126-933-11	ELECT	100MF 20% 16V	C615	1-164-735-11	CAPACITOR	0.0015MF 10% 500V
C441	1-124-925-11	ELECT	2.2MF 20% 50V	C617	1-137-367-11	FILM	0.0033MF 5% 50V
C442	1-136-169-00	FILM	0.22MF 5% 50V	C619	1-106-355-12	MYLAR	0.0033MF 10% 200V
C443	1-126-941-11	ELECT	470MF 20% 25V	C622	1-126-942-61	ELECT	1000MF 20% 25V
C444	1-126-941-11	ELECT	470MF 20% 25V	C623	1-123-024-21	ELECT	33MF 160V
C447	1-136-169-00	FILM	0.22MF 5% 50V	C625	1-104-665-11	ELECT	100MF 20% 25V
C448	1-136-173-00	FILM	0.47MF 5% 50V	C628	1-104-664-11	ELECT	47MF 20% 25V
C490	1-126-941-11	ELECT	470MF 20% 25V	C631	1-104-664-11	ELECT	47MF 20% 25V
C491	1-126-942-61	ELECT	1000MF 20% 25V	C632	1-124-902-00	ELECT	0.47MF 20% 50V
C502	1-126-965-11	ELECT	22MF 20% 50V	C633	1-124-925-11	ELECT	2.2MF 20% 50V



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REF.NO.	PART NO.	DESCRIPTION	REMARK
C636	1-113-920-11	ELECT	0.0022MF 20% 250V
C638	1-113-920-11	ELECT	0.0022MF 20% 250V
C640	1-136-311-11	FILM	0.47MF 20% 125V
C641	1-136-167-00	FILM	0.15MF 5% 50V
C642	1-136-167-00	FILM	0.15MF 5% 50V
C643	1-165-127-11	CERAMIC	470pF 10% 500V
C644	1-165-127-11	CERAMIC	470pF 10% 500V
C645	1-165-127-11	CERAMIC	470pF 10% 500V
C646	1-165-127-11	CERAMIC	470pF 10% 500V
C653	1-113-910-11	ELECT	470pF 10% 250V
C685	1-124-903-11	ELECT	1MF 20% 50V
C690	1-124-902-00	ELECT	0.47MF 20% 50V
C691	1-126-941-11	ELECT	470MF 20% 25V
C692	1-104-664-11	ELECT	47MF 20% 25V
C693	1-136-173-00	FILM	0.47MF 5% 50V
<FILTER>			
CF001	1-579-952-21	VIBRATOR, CERAMIC	
<FILTER BLOCK>			
CM301	1-473-548-11	FILTER BLOCK, COMB	
<CONNECTOR>			
CN203 *	1-560-124-00	PLUG, CONNECTOR (2.5MM) 4P	
CN401	1-564-505-11	PLUG, CONNECTOR 2P	
CN402	1-564-505-11	PLUG, CONNECTOR 2P	
CN501 *	1-580-798-11	CONNECTOR PIN (DY) 6P	
CN601 *	1-580-843-11	PIN, CONNECTOR (POWER)	
CN602	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
<DIODE>			
D001	8-719-109-84	DIODE RD5.1ESB1	
D201	8-719-110-72	DIODE RD30ESB2	
D203	8-719-109-86	DIODE RD3.3ESB2	
D205	8-719-110-17	DIODE RD10ESB2	
D206	8-719-110-17	DIODE RD10ESB2	
D207	8-719-110-17	DIODE RD10ESB2	
D225	8-719-110-17	DIODE RD10ESB2	
D226	8-719-110-17	DIODE RD10ESB2	
D227	8-719-110-17	DIODE RD10ESB2	
D310	8-719-109-84	DIODE RD5.1ESB1	
D502	8-719-908-03	DIODE GP08D	
D503	8-719-911-19	DIODE 1SS119-25	
D504	8-719-302-43	DIODE EL1Z	
D505	8-719-911-19	DIODE 1SS119-25	
D506	8-719-110-08	DIODE RD8.2ESB2	
D507	8-719-911-19	DIODE 1SS119-25	
D509	8-719-302-43	DIODE EL1Z	
D510	8-719-302-43	DIODE EL1Z	

REF.NO.	PART NO.	DESCRIPTION	REMARK
D512	8-719-302-43	DIODE EL1Z	
D514	8-719-911-19	DIODE 1SS119-25	
D515	8-719-302-43	DIODE EL1Z	
D601	8-719-510-21	DIODE B3SB60F	
D602	8-719-911-19	DIODE 1SS119-25	
D603	8-719-911-19	DIODE 1SS119-25	
D604	8-719-911-19	DIODE 1SS119-25	
D605	8-719-022-97	DIODE D2S4MF	
D606	8-719-022-97	DIODE D2S4MF	
D607	8-719-510-26	DIODE D1NL20-TA	
D608	8-719-510-26	DIODE D1NL20-TA	
D609	8-719-510-26	DIODE D1NL20-TA	
D610	8-719-510-26	DIODE D1NL20-TA	
D611	8-719-110-17	DIODE RD10ESB2	
D612	8-719-109-90	DIODE RD5.6ESB3	
D613	8-719-087-53	DIODE RZ0150V1	
D614	8-719-911-19	DIODE 1SS119-25	
D615	8-719-911-19	DIODE 1SS119-25	
D619	8-719-911-19	DIODE 1SS119-25	
<FUSE>			
F601	1-579-952-21	FUSE 6 JA/125V	
	1-533-223-11	HOLDER, FUSE; for F601	
<FERRITE BEAD>			
FB501	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH	
FB601	1-412-911-11	INDUCTOR, FERRITE BEAD	
FB602	1-412-911-11	INDUCTOR, FERRITE BEAD	
FB605	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH	
FB606	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH	
FB607	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH	
FB611	1-412-911-11	INDUCTOR, FERRITE BEAD	
<IC>			
IC001	8-759-428-84	IC M37267M6-065SP	
IC003	8-759-354-27	IC ST24C01FM6TR	
IC103	8-747-905-11	IC SBX1790-51	
IC201	8-759-100-96	IC UPC4558G2	
IC210	8-759-710-86	IC NJM2233BM	
IC211	8-759-711-32	IC NJM2245M	
IC215	8-759-710-07	IC NJM2234M	
IC216	8-759-710-07	IC NJM2234M	
IC217	8-759-710-07	IC NJM2234M	
IC301	8-752-070-52	IC CXA1870S	
IC405	8-759-369-39	IC BH3856FS-E2	
IC408	8-759-980-43	IC TDA2009A	
IC501	8-759-801-98	IC LA7830	
IC502	8-759-100-96	IC UPC4558G2	

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
IC601 Δ	8-759-198-31	IC UEC1093J-1-F		R002	1-216-073-00	METAL GLAZE	10K 5% 1/10W
IC693	8-759-371-21	IC MM1319AFBE		R003	1-216-033-00	METAL GLAZE	220 5% 1/10W
	<JACK>			R005	1-249-429-11	CARBON	10K 5% 1/4W
J200	1-580-441-11	JACK, PIN 2P		R007	1-249-421-11	CARBON	2.2K 5% 1/4W
J201	1-580-443-11	JACK, PIN 3P		R008	1-216-033-00	METAL GLAZE	220 5% 1/10W
J202	1-691-110-11	JACK, PIN 3P		R009	1-216-033-00	METAL GLAZE	220 5% 1/10W
J203	1-694-063-11	TERMINAL, S		R010	1-216-033-00	METAL GLAZE	220 5% 1/10W
J400	1-568-267-21	JACK		R011	1-216-033-00	METAL GLAZE	220 5% 1/10W
	<COIL>			R012	1-247-815-91	CARBON	220 5% 1/4W
L001	1-410-470-11	INDUCTOR 10UH		R013	1-216-081-00	METAL GLAZE	22K 5% 1/10W
L002	1-408-421-00	INDUCTOR 100UH		R014	1-216-033-00	METAL GLAZE	220 5% 1/10W
L003	1-408-421-00	INDUCTOR 100UH		R015	1-216-033-00	METAL GLAZE	220 5% 1/10W
L202	1-410-470-11	INDUCTOR 10UH		R016	1-216-041-00	METAL GLAZE	470 5% 1/10W
L316	1-410-671-31	INDUCTOR 47UH		R017	1-216-113-00	METAL GLAZE	470K 5% 1/10W
L501	1-412-553-11	INDUCTOR 3.3mH		R018	1-216-049-91	METAL GLAZE	1K 5% 1/10W
L502	1-410-669-31	INDUCTOR 33UH		R019	1-249-425-11	CARBON	4.7K 5% 1/4W
L503 Δ	1-412-531-31	INDUCTOR 33UH		R020	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
L551	1-412-533-21	INDUCTOR 47UH		R021	1-216-045-00	METAL GLAZE	680 5% 1/10W
L612	1-412-529-11	INDUCTOR 22UH		R022	1-216-047-91	METAL GLAZE	820 5% 1/10W
	<IC LINK>			R023	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
PS401	1-532-637-00	LINK, IC 1A/150V		R025	1-216-033-00	METAL GLAZE	220 5% 1/10W
	<TRANSISTOR>			R026	1-216-033-00	METAL GLAZE	220 5% 1/10W
Q205	8-729-422-27	TRANSISTOR 2SD601A-Q		R027	1-216-033-00	METAL GLAZE	220 5% 1/10W
Q210	8-729-422-27	TRANSISTOR 2SD601A-Q		R028	1-216-041-00	METAL GLAZE	470 5% 1/10W
Q211	8-729-422-27	TRANSISTOR 2SD601A-Q		R030	1-249-429-11	CARBON	10K 5% 1/4W
Q301	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R		R031	1-216-045-00	METAL GLAZE	680 5% 1/10W
Q305	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R		R032	1-216-033-00	METAL GLAZE	220 5% 1/10W
Q405	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R		R033	1-216-033-00	METAL GLAZE	220 5% 1/10W
Q501 Δ	8-729-105-08	TRANSISTOR 2SA1930-B6		R038	1-216-049-91	METAL GLAZE	1K 5% 1/10W
Q550	8-729-140-96	TRANSISTOR 2SD774-34		R039	1-216-077-00	METAL GLAZE	15K 5% 1/10W
Q551 Δ	8-729-810-49	TRANSISTOR 2SD1877S-SORV-CA		R041	1-216-295-91	CONDUCTOR, CHIP	(2012)
Q601	8-729-422-27	TRANSISTOR 2SD601A-Q		R043	1-249-417-11	CARBON	1K 5% 1/4W
Q602 Δ	8-729-035-37	TRANSISTOR 2SC5271-ROY6-F		R044	1-247-815-91	CARBON	220 5% 1/4W
Q603 Δ	8-729-035-37	TRANSISTOR 2SC5271-ROY6-F		R045	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
Q605	8-729-422-27	TRANSISTOR 2SD601A-Q		R046	1-247-815-91	CARBON	220 5% 1/4W
Q606	8-729-423-99	TRANSISTOR 2SD2137-OP-TA		R047	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
Q607	8-729-140-96	TRANSISTOR 2SD774-34		R048	1-216-025-91	METAL GLAZE	100 5% 1/10W
Q610	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R		R049	1-216-089-91	METAL GLAZE	47K 5% 1/10W
Q612	8-729-422-27	TRANSISTOR 2SD601A-Q		R050	1-216-073-00	METAL GLAZE	10K 5% 1/10W
Q613	8-729-422-27	TRANSISTOR 2SD601A-Q		R051	1-216-033-00	METAL GLAZE	220 5% 1/10W
Q614	8-729-422-27	TRANSISTOR 2SD601A-Q		R053	1-216-033-00	METAL GLAZE	220 5% 1/10W
Q615	8-729-422-27	TRANSISTOR 2SD601A-Q		R054	1-216-073-00	METAL GLAZE	10K 5% 1/10W
	<RESISTOR>			R055	1-216-033-00	METAL GLAZE	220 5% 1/10W
R001	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R056	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
				R057	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
				R058	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
				R070	1-249-425-11	CARBON	4.7K 5% 1/4W
				R071	1-249-425-11	CARBON	4.7K 5% 1/4W
				R072	1-216-033-00	METAL GLAZE	220 5% 1/10W



<u>REF.NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>REMARK</u>	<u>REF.NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>REMARK</u>
R080	1-249-429-11	CARBON	10K 5% 1/4W	R330	1-249-413-11	CARBON	470 5% 1/4W
R101	1-249-429-11	CARBON	10K 5% 1/4W	R335	1-247-815-91	CARBON	220 5% 1/4W
R200	1-216-079-00	METAL GLAZE	18K 5% 1/10W	R336	1-247-815-91	CARBON	220 5% 1/4W
R203	1-215-899-11	METAL OXIDE	15K 5% 2W F	R339	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R206	1-216-689-11	METAL GLAZE	39K 5% 1/10W	R340	1-216-077-00	METAL GLAZE	15K 5% 1/10W
R207	1-216-083-00	METAL GLAZE	27K 5% 1/10W	R341	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R212	1-249-425-11	CARBON	4.7K 5% 1/4W	R342	1-216-033-00	METAL GLAZE	220 5% 1/10W
R213	1-216-113-00	METAL GLAZE	470K 5% 1/10W	R343	1-247-815-91	CARBON	220 5% 1/4W
R216	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R344	1-247-815-91	CARBON	220 5% 1/4W
R217	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W	R345	1-247-815-91	CARBON	220 5% 1/4W
R218	1-216-085-00	METAL GLAZE	33K 5% 1/10W	R346	1-247-815-91	CARBON	220 5% 1/4W
R219	1-216-049-91	METAL GLAZE	1K 5% 1/10W	R347	1-216-045-00	METAL GLAZE	680 5% 1/10W
R220	1-216-085-00	METAL GLAZE	33K 5% 1/10W	R348	1-247-815-91	CARBON	220 5% 1/4W
R222	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R349	1-247-807-31	CARBON	100 5% 1/4W
R223	1-247-807-31	CARBON	100 5% 1/4W	R351	1-249-429-11	CARBON	10K 5% 1/4W
R224	1-216-049-91	METAL GLAZE	1K 5% 1/10W	R353	1-249-417-11	CARBON	1K 5% 1/4W
R225	1-216-295-91	CONDUCTOR, CHIP	(2012)	R355	1-216-077-00	METAL GLAZE	15K 5% 1/10W
R226	1-216-295-91	CONDUCTOR, CHIP	(2012)	R356	1-249-421-11	CARBON	2.2K 5% 1/4W
R231	1-216-113-00	METAL GLAZE	470K 5% 1/10W	R357	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R232	1-216-022-00	METAL GLAZE	75 5% 1/10W	R358	1-216-125-00	METAL GLAZE	1.5M 5% 1/10W
R233	1-216-113-00	METAL GLAZE	470K 5% 1/10W	R360	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W
R243	1-216-295-91	CONDUCTOR, CHIP	(2012)	R361	1-216-033-00	METAL GLAZE	220 5% 1/10W
R263	1-216-022-00	METAL GLAZE	75 5% 1/10W	R362	1-216-041-00	METAL GLAZE	470 5% 1/10W
R264	1-216-113-00	METAL GLAZE	470K 5% 1/10W	R363	1-216-105-91	METAL GLAZE	220K 5% 1/10W
R265	1-216-113-00	METAL GLAZE	470K 5% 1/10W	R365	1-249-419-11	CARBON	1.5K 5% 1/4W
R270	1-216-113-00	METAL GLAZE	470K 5% 1/10W	R372	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R271	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	R377	1-216-295-91	CONDUCTOR, CHIP	(2012)
R272	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	R402	1-247-815-91	CARBON	220 5% 1/4W
R273	1-216-097-91	METAL GLAZE	100K 5% 1/10W	R403	1-247-815-91	CARBON	220 5% 1/4W
R274	1-216-097-91	METAL GLAZE	100K 5% 1/10W	R411	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R283	1-247-804-11	CARBON	75 5% 1/4W	R435	1-249-427-11	CARBON	6.8K 5% 1/4W
R284	1-216-033-00	METAL GLAZE	220 5% 1/10W	R438	1-249-421-11	CARBON	2.2K 5% 1/4W
R285	1-216-033-00	METAL GLAZE	220 5% 1/10W	R439	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R288	1-216-079-00	METAL GLAZE	18K 5% 1/10W	R454	1-216-295-91	CONDUCTOR, CHIP	(2012)
R290	1-247-807-31	CARBON	100 5% 1/4W	R470	1-216-295-91	CONDUCTOR, CHIP	(2012)
R293	1-216-025-91	METAL GLAZE	100 5% 1/10W	R477	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R294	1-216-025-91	METAL GLAZE	100 5% 1/10W	R478	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R296	1-216-022-00	METAL GLAZE	75 5% 1/10W	R479	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R298	1-247-807-31	CARBON	100 5% 1/4W	R480	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R301	1-249-425-11	CARBON	4.7K 5% 1/4W	R481	1-216-041-00	METAL GLAZE	470 5% 1/10W
R302	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R482	1-249-429-11	CARBON	10K 5% 1/4W
R306	1-249-417-11	CARBON	1K 5% 1/4W	R483	1-249-429-11	CARBON	10K 5% 1/4W
R307	1-216-295-91	CONDUCTOR, CHIP	(2012)	R484	1-216-013-00	METAL GLAZE	33 5% 1/10W
R310	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R486	1-216-013-00	METAL GLAZE	33 5% 1/10W
R311	1-216-049-91	METAL GLAZE	1K 5% 1/10W	R487	1-249-417-11	CARBON	1K 5% 1/4W
R312	1-216-295-91	CONDUCTOR, CHIP	(2012)	R488	1-216-298-00	METAL GLAZE	2.2 5% 1/10W
R326	1-216-049-91	METAL GLAZE	1K 5% 1/10W	R489	1-249-417-11	CARBON	1K 5% 1/4W
				R490	1-249-417-11	CARBON	1K 5% 1/4W
				R491	1-249-411-11	CARBON	330 5% 1/4W

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

The components identified by \square in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.



REF. NO.	PART NO.	DESCRIPTION	REMARK
R492	1-249-411-11	CARBON	330 5% 1/4W
R493	1-216-298-00	METAL GLAZE	2.2 5% 1/10W
R494	1-249-417-11	CARBON	1K 5% 1/4W
R495	1-216-349-00	METAL OXIDE	1 5% 1W F
R501	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R505	1-216-349-00	METAL OXIDE	1 5% 1W F
R506	1-216-453-00	METAL OXIDE	270 5% 2W F
R507	1-247-891-00	CARBON	330K 5% 1/4W
R508	1-249-417-11	CARBON	1K 5% 1/4W
R509	1-216-101-00	METAL GLAZE	150K 5% 1/10W
R510	1-249-420-11	CARBON	1.8K 5% 1/4W
R511	1-249-429-11	CARBON	10K 5% 1/4W
R512	1-208-806-11	METAL GLAZE	10K 0.50% 1/10W
R513	1-208-773-11	METAL GLAZE	430 0.50% 1/10W
R515	1-208-806-11	METAL GLAZE	10K 0.50% 1/10W
R518	1-215-429-00	METAL	2.2K 1% 1/4W
R519	1-216-467-11	METAL OXIDE	56K 5% 2W F
R520	1-208-777-11	METAL GLAZE	620 0.50% 1/10W
R523	1-215-469-00	METAL	100K 1% 1/4W
\square R525		METAL GLAZE	0.50% 1/10W
R527	1-208-806-11	METAL GLAZE	10K 0.50% 1/10W
R531	1-216-349-00	METAL OXIDE	1 5% 1W F
R532	1-215-457-00	METAL	33K 1% 1/4W
R533	1-216-355-11	METAL OXIDE	3.3 5% 1W F
R534	1-215-457-00	METAL	33K 1% 1/4W
R536	1-215-437-00	METAL	4.7K 1% 1/4W
R538	1-215-864-00	METAL OXIDE	150 5% 1W F
R540	1-249-441-11	CARBON	100K 5% 1/4W
R542 Δ	1-216-093-00	METAL GLAZE	68K 5% 1/10W
R543 Δ	1-208-842-11	METAL GLAZE	330K 0.50% 1/10W
R544	1-208-787-11	METAL GLAZE	1.6K 0.50% 1/10W
R545 Δ	1-249-441-11	CARBON	100K 5% 1/4W
R547 Δ	1-249-429-11	CARBON	10K 5% 1/4W
R548 Δ	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R549 Δ	1-216-369-00	METAL OXIDE	1 5% 2W F
R550	1-216-295-91	CONDUCTOR, CHIP	(2012)
R554	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R555 Δ	1-215-922-11	METAL OXIDE	60K 5% 3W F
R559 Δ	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R560	1-216-097-91	METAL GLAZE	100K 5% 1/10W
R563	1-215-880-00	METAL OXIDE	10 5% 2W F
R590	1-216-295-91	CONDUCTOR, CHIP	(2012)
R601 Δ	1-219-513-11	RESISTOR(SURGE RESISTANT)	4.7W
R602	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R603 Δ	1-205-998-11	WIREWOUND	1 5% 10W
R605	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R606	1-260-288-11	CARBON	0.47 5% 1/2W
R609	1-216-353-00	METAL OXIDE	2.2 5% 1W F
R610	1-216-353-00	METAL OXIDE	2.2 5% 1W F

REF. NO.	PART NO.	DESCRIPTION	REMARK
R611	1-249-396-11	CARBON	18 5% 1/4W
R612	1-249-396-11	CARBON	18 5% 1/4W
R615	1-216-093-00	METAL GLAZE	68K 5% 1/10W
R616	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R617 Δ	1-208-790-11	METAL GLAZE	2.2K 0.50% 1/10W
R618 Δ	1-215-459-00	METAL	100K 1% 1/4W
R619	1-216-001-00	METAL GLAZE	10 5% 1/10W
R620	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R622	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R623	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R625	1-216-377-11	METAL OXIDE	4.7 5% 2W F
R628	1-249-415-11	CARBON	680 5% 1/4W
R629	1-208-806-11	METAL GLAZE	10K 0.50% 1/10W
R630	1-208-826-11	METAL GLAZE	68K 0.50% 1/10W
R635	1-212-857-00	FUSIBLE	10 5% 1/4W F
R639	1-249-425-11	CARBON	4.7K 5% 1/4W
R640	1-216-085-00	METAL GLAZE	33K 5% 1/10W
R641	1-247-889-00	CARBON	270K 5% 1/4W
R643	1-247-889-00	CARBON	270K 5% 1/4W
R645	1-247-893-11	CARBON	390K 5% 1/4W
R651 Δ	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R652 Δ	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R653 Δ	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R654 Δ	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R655	1-216-085-00	METAL GLAZE	33K 5% 1/10W
R656	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R681	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R682	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R683	1-215-924-00	METAL OXIDE	15K 5% 3W F
R684	1-249-429-11	CARBON	10K 5% 1/4W
R690	1-216-355-11	METAL OXIDE	3.3 5% 1W F
R704	1-216-372-11	METAL OXIDE	1.8 5% 2W F
		<RELAY>	
RY601	1-755-018-11	RELAY	
		<SWITCH>	
S001	1-692-431-21	SWITCH, TACTILE	
S002	1-692-431-21	SWITCH, TACTILE	
S003	1-692-431-21	SWITCH, TACTILE	
S004	1-692-431-21	SWITCH, TACTILE	
S005	1-692-431-21	SWITCH, TACTILE	
S006	1-692-431-21	SWITCH, TACTILE	
		<TRANSFORMER>	
T504 Δ	8-598-961-00	TRANSFORMER ASSY. FLYBACK	
T551 Δ	1-437-195-11	TRANSFORMER HORIZONTAL DRIVE	
T602	1-423-895-11	TRANSFORMER, LINE FILTER (LPT)	
T603 Δ	1-429-483-21	TRANSFORMER CONVERTER (PTT)	



The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK
T604	Δ 1-427-864-11	TRANSFORMER, CONVERTER (PRT)	
		<THERMISTOR>	
THP601	1-810-597-11	THERMISTOR, POSITIVE	
		<TUNER>	
TU101	8-598-341-00	TUNER BTF-WA405	
		<VARISTOR>	
VDR601	Δ 1-801-074-4	VARISTOR RRV10D271	
		<CRYSTAL>	
X300	1-577-611-11	OSCILATOR, CERAMIC	
X303	1-760-190-41	VIBRATOR, CRYSTAL	

*	A-1331-518-A	MOUNTED PCB, C	

	1-900-800-64	CONNECTOR ASSY, 1P G2 SCREEN	
		<CAPACITOR>	
C701	1-162-114-00	CERAMIC	0.0047MF 2KV
C706	1-126-965-11	ELECT	22MF 20% 50V
C712	1-163-007-11	CERAMIC CHIP	680pF 10% 50V
C732	1-163-007-11	CERAMIC CHIP	680pF 10% 50V
C752	1-163-007-11	CERAMIC CHIP	680pF 10% 50V
C771	1-102-110-00	CERAMIC	220pF 10% 50V
C772	1-102-110-00	CERAMIC	220pF 10% 50V
C773	1-102-110-00	CERAMIC	220pF 10% 50V
		<CONNECTOR>	
CN701	1-695-915-11	TAB (CONTACT)	
		<DIODE>	
D770	8-719-911-19	DIODE 1SS119-25	
D771	8-719-911-19	DIODE 1SS119-25	
D772	8-719-911-19	DIODE 1SS119-25	
D773	8-719-911-19	DIODE 1SS119-25	
D777	8-719-109-72	DIODE RD3.9ESB2	
		<JACK>	
J701	1-251-182-11	SOCKET, CRT	
		<COIL>	
L702	1-408-419-00	INDUCTOR	68UH

REF.NO.	PART NO.	DESCRIPTION	REMARK
		<TRANSISTOR>	
Q711	8-729-326-11	TRANSISTOR 2SC2611	
Q731	8-729-326-11	TRANSISTOR 2SC2611	
Q751	8-729-326-11	TRANSISTOR 2SC2611	
Q770	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q771	8-729-200-17	TRANSISTOR 2SA1091-0	
Q772	8-729-200-17	TRANSISTOR 2SA1091-0	
Q773	8-729-200-17	TRANSISTOR 2SA1091-0	
		<RESISTOR>	
R700	1-260-087-11	CARBON	100 5% 1/2W
R703	1-260-105-11	CARBON	3.3K 5% 1/2W
R710	1-260-099-11	CARBON	1K 5% 1/2W
R712	1-215-924-00	METAL OXIDE	15K 5% 3W F
R716	1-249-411-11	CARBON	330 5% 1/4W
R717	1-216-295-91	CONDUCTOR, CHIP	(2012)
R730	1-260-099-11	CARBON	1K 5% 1/2W
R732	1-215-924-00	METAL OXIDE	15K 5% 3W F
R736	1-249-411-11	CARBON	330 5% 1/4W
R737	1-216-295-91	CONDUCTOR, CHIP	(2012)
R750	1-260-099-11	CARBON	1K 5% 1/2W
R751	1-216-295-91	CONDUCTOR, CHIP	(2012)
R752	1-215-924-00	METAL OXIDE	15K 5% 3W F
R756	1-249-411-11	CARBON	330 5% 1/4W
R757	1-216-295-91	CONDUCTOR, CHIP	(2012)
R770	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R771	1-216-049-91	METAL GLAZE	1K 5% 1/10W
R772	1-216-049-9	METAL GLAZE	1K 5% 1/10W
R773	1-216-049-91	METAL GLAZE	1K 5% 1/10W
R774	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R775	1-216-049-91	METAL GLAZE	1K 5% 1/10W
R776	1-216-033-00	METAL GLAZE	220 5% 1/10W

		MISCELLANEOUS	

	1-505-404-11	SPEAKER (8CM)	
	1-751-057-11	CORD, POWER (WITH CONNECTOR) 10A/125V	
	1-766-374-11	PLUG, F-PIN	
	4-055-054-01	DOOR	
	1-409-707-31	COIL, DEMAGNETIZATION	
	1-452-032-00	MAGNET, DISC	
	1-452-277-00	MAGNET, BMC	
	4-046-161-01	EMBLEM (NO.8), SONY	
	4-051-735-22	PIECE A(75), CONV. CORRECT	
	4-054-278-01	BUTTON, MULT	
*	4-369-319-11	BAND, DEGAUSSING COIL	
*	4-375-394-01	SPRING, TENSION	
Δ	8-451-440-11	DY Y21MVA(VTM)	

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

<u>REF.NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>REMARK</u>	<u>REF.NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>REMARK</u>
Δ 8-738-768-05		CRT Z1M A5LLDG50X					
		ACCESSORIES AND PACKING MATERIAL					

	3-810-814-21	MANUAL, INSTRUCTION					
	3-856-912-01	COMMANDER INSTRUCTION					
*	4-039-442-01	CUSHION (UPPER) (ASSY)					
*	4-039-443-01	CUSHION (LOWER) (ASSY)					
*	4-039-550-01	INDIVIDUAL CARTON					
	4-041-254-01	BAG, PROTECTION					
	3-701-627-00	BAG, POLYETHYLENE					
		REMOTE COMMANDER					

	1-467-059-21	REMOTE COMMANDER (RM-Y118)					
	9-903-826-01	COVER, BATTERY for (RM -Y118)					

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